

حمل الآن

مجاناً وحصرياً

امتحانات رقم (1)

الترم الاول



1 Cairo Governorate

Answer the following questions :

Question 1

A Complete the following sentences :

1. The lens is used to correct short-sightedness.
2. In fertilization process, the male gamete fuses with the female gamete to form
3. The result of multiplying the speed of a moving object by time is equal to

B What is meant by ... ?

1. The value of displacement equals 10 meter.
2. The focal length of a concave mirror equals 4 cm.

C Study the following figures then answer :

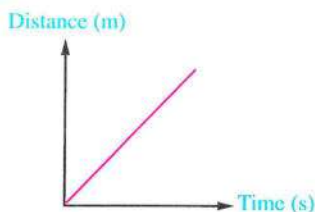


Fig. (1)



Fig. (2)

1. Figure (1) What does the type of speed by which the object moves ?
What is the value of acceleration ?
2. Figure (2) Mention the name of the living organism and the method of its reproduction.

Question 2

A Choose the correct answer :

1. If the distance between an object and its image in a plane mirror equals 80 cm, so the distance of the object to the mirror surface is cm.
a. 20 b. 40 c. 60 d. 80
2. The scientist who established the modern theory about the evolution of the solar system is
a. Laplace. b. Chamberlain. c. Fred Hoyle. d. Moulton.
3. If the number of chromosomes in a somatic cell is $2N$, then their number in the gamete resulting from the division of a reproductive cell is
a. N b. $2N$ c. $3N$ d. $4N$

B What are the results of ... ?

1. A light ray when incident on a concave mirror passing through its centre of curvature.
2. Absence of the centrosomes from an animal cell.

- C** 1. **Explain the importance of** : crossing over phenomenon that occur between the inner chromatids in a tetrad.
2. A car moves at a speed of 30 m/sec., and when the driver uses the brakes, the car stops after 10 sec. **Calculate** the acceleration by which the car moves from the moment of using the brakes.

Question 3

- A** **Correct the underlined in the following sentences :**

1. The plane mirror is placed to the right and left sides of the car's driver.
2. The relative speed is the result of dividing the total distance covered by the total time.
3. Hydrogen and nitrogen gases produced stars, galaxies and the universe over millions of years.

- B** **Give reasons for :**

1. The image formed by the plane mirror cannot be received on a screen.
2. Shrinking of spindle fibers during the anaphase of mitosis.

- C** **Compare between :**

1. Force – mass (according to the kind of physical quantity).
2. Mitosis – meiosis (according to the type of cells in which the division takes place).

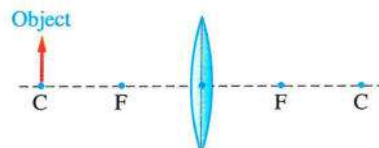
Question 4

- A** **Write the scientific term for each of the following statements :**

1. It is located in one of the spiral arms of the Milky Way on the edge of the galaxy.
2. A point inside the lens lies on the principal axis in the mid distance between its faces.
3. A glowing gaseous sphere revolving around itself according to Laplace theory.

- B** 1. **What are the properties of ... ?**

The formed image of an object that is shown in the opposite figure?



2. **What is meant by ... ?**

An object moving in a straight line covers a distance of 20 meters each one second.

- C** **Answer the following :**

1. When is the relative speed of a moving object equals to double of its actual speed ?
2. What is the type of asexual reproduction at which the parental individual disappears ? and mention one example.

Question 1

1. The path of movement may be, curved or a combination of both.
2. If the angle between the incident light ray and the reflected light ray is 60° , then the angle of incidence equals
3. Gametes in living organisms are formed by the division of cells.

1. A car moving at uniform speed equals 40 km/h.
2. The radius of curvature of a concave lens is 7 cm.

1. A body moves in a straight line at a uniform speed and covered (150) meter in (10) second, then returns to the starting point in a time of (30) second. Calculate the average speed of this object during the return trip.
2. Vegetative reproduction is a form of asexual reproduction. What is the importance of the vegetative reproduction ?

Question 2

1. Meiosis differs from mitosis in that each cell contains half the number of chromosomes of the parent cell. ()
2. When an object is placed at the focus of a convex lens, upright image is formed. ()
3. Stars gather into groups to form galaxies. ()

1. The diameter of the eyeball is greater than normal.
2. The speed of an object changes by equal values through equal periods of time

1. Sponge – Paramecium	(according to type of reproduction).
2. The length – The force	(according to the type of physical quantity).

Question 3

1. Scientists believe that the universe emerged from a massive explosion and is in a state of

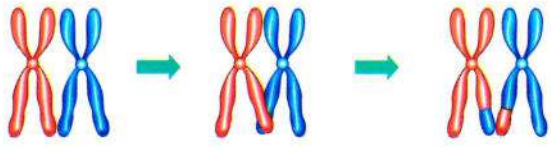
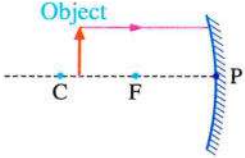
a. continuous contraction. b. contraction then expansion.
c. expansion then contraction. d. continuous expansion.

2. The graphical relationship (..... - time) for movement of an object at a constant speed is represented by a straight line parallel to the time axis.
a. distance b. displacement c. speed d. acceleration
3. If you know that the focal length of a concave mirror is 6 cm, then the distance from the mirror in which an object is placed to form a virtual image is equal to cm.
a. 3 b. 6 c. 12 d. 16

B Give reasons for :

1. Displacement is a vector physical quantity.
2. It is not possible to receive the image that is formed by a plane mirror on a screen.

C Study the following figures, then answer the questions :

Fig (1)	Fig (2)
	
1. The shape represents one of the vital phenomena, what is the name of this phenomenon ? 2. What is the importance of this phenomenon ?	1. The figure represents one of the cases of image formation in a concave mirror. Explain the path of the rays forming the image of an object placed in front of the mirror between the focus and the centre of curvature. 2. Mention the properties of this image.

Question 4

A Choose from column (B) what suits it in column (A) :

(A)	(B)
1. The Nebular Theory	a. very thin lens made of plastic.
2. Contact lenses	b. produce the galaxies, stars and universe through millions of years.
3. Helium and Hydrogen gases	c. considered the oldest assumptions that explained the origin of the solar system.

B Answer the following :

1. When a virtual, diminished and upright image of an object behind the mirror is formed ?
2. When we say an object moving at irregular speed ?

C What is meant by ... ?

1. Relative speed.
2. Regeneration.

3 Alexandria Governorate

Answer the following questions :

Question 1

A Choose the correct answer :

- The result of multiplying the speed of a moving object by time equals
a. acceleration. b. distance. c. uniform speed. d. average speed.
- If the radius of curvature of a concave mirror equal 30 cm, then its focal length is equal to cm.
a. 5 b. 10 c. 15 d. 60
- The ratio between the number of chromosomes that present in a gamete which resulting from meiosis division to the number of chromosomes that present in a somatic cell of the living organism is
a. $\frac{1}{4}$ b. $\frac{1}{3}$ c. $\frac{1}{2}$ d. $\frac{2}{1}$

B Mention one use of the following :

- Speedometer.
- Contact lenses.

C Complete :

- Acceleration is a physical quantity, which is measured in unit.
- The type of asexual reproduction in amoeba is , but yeast fungus reproduces asexually by

Question 2

A Put (✓) or (✗) :

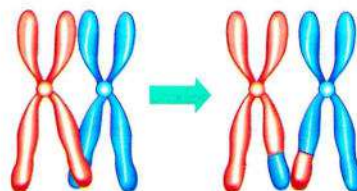
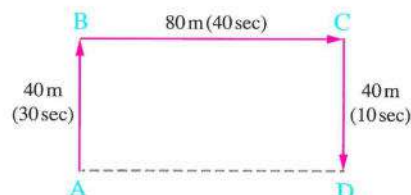
- Increasing the convexity of the eye lens causes long-sightedness. ()
- The solar system is located in one of the spiral arms of the Milky Way galaxy. ()
- Zygote is the cell that produced due to the fertilization process. ()

B Cross out the odd word and Write the scientific term for the rest :

- Time – Length – Force – Mass.
- Virtual image – Upright image – Real image – Image equal in size to the object.

C Answer the following :

- Look at the opposite figure, then calculate :
a. Displacement.
b. Velocity.
- Look at the opposite figure, then mention :
a. The name of this phenomenon.
b. The importance of this phenomenon.



Question 3

A Write the scientific term for each of the following statements :

1. The speed of a moving object relative to an observer.
2. The line extended between two centres of curvature of a lens passing through the optical centre of the lens.
3. The space which contains all the galaxies, stars, planets, moons, living organisms and every thing.

B What happens when ?

1. A body moves with uniform speed (according to the acceleration).
2. An incident light ray falls perpendicular on a reflecting surface of a plane mirror.

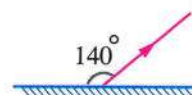
C Compare between :

1. Virtual image – Real image. (according to definition).
2. Centromere – Centrosome

Question 4

A Correct the underlined words :

1. When an object placed at distance less than the focal length of a convex lens, the formed image is virtual, **inverted** and enlarged.
2. From the opposite figure, the incident angle equals **40°**
3. The universe emerged from the particles of hydrogen and **oxygen**.

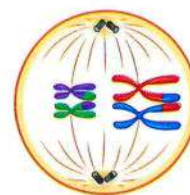


B Give reasons for :

1. The word “Ambulance” is written in a laterally inverted way on the ambulance car.
2. The motion of a train is an example of a motion in one direction.

C Answer the following :

1. If the speed of the moving car equals 90 Km/h, calculate its speed in m/s ?
2. From the opposite figure :
Mention the name of the phase and the type of cell division.



4 Qalyoubia Governorate

Answer the following questions :

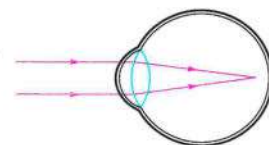
Question 1

A Choose the correct answer :

1. The speed of a moving object relative to a static or moving observer is known as speed.
- a. regular b. average
- c. irregular d. relative

2. The opposite figure represents a vision defect known as

- a. long-sightedness. b. cataract.
c. short-sightedness. d. astigmatism.



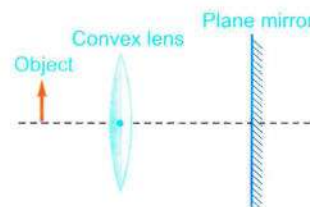
3. The number of chromosomes in a gamete is its number in the parental cell.

- a. equal to b. quarter c. half d. double

- B** 1. A car moved at a regular speed of 20 m/s for 10 sec., then the driver applied the brakes, its speed decreased at a rate of 2 m/s² calculate the car speed after 3 sec. from using the brakes.

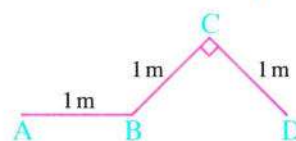
2. **In the opposite figure :**

An object is placed in the front of a convex lens, and a plane mirror is placed behind the lens. When looking at the mirror, no image is formed explain that.



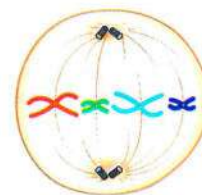
C 1. **In the opposite figure :**

An object is moved from A to D, passing through B and C, calculate the displacement of this object.



2. **In the opposite figure :**

A cellular division in a somatic cell of an animal, what is the name of the phase that follows this phase ?



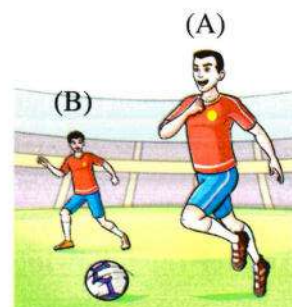
Question 2

A Write the scientific term for each the following statements :

1. A point inside the lens on its principal axis at the mid distance between the two spherical faces.
2. A force responsible for maintaining the planets of the solar system in their orbits.
3. The point of connection of the two chromatids of a chromosome.

B 1. **In the opposite figure :**

The ball is far from player (A) 50 m who runs with a speed of 3 m/s and far from player (B) 35 m who runs with a speed of 2 m/s, which player reaches the ball firstly (A) or (B) ? Showing the method of solution.



2. In a table: Compare between the real image & virtual image according to :
(The ability to be received on a screen –
Way of formation – Properties)

C Answer the following :

1. A car moves on a straight road covering a distance of 90 km, where it cover $\frac{1}{3}$ distance with a speed of 25 km/h and the rest distance with a speed of 75 km/h, calculate the average speed by which the car moves.

2. In the two opposite figures, mention the type of asexual reproduction in each of these living organisms.



Fig. (A)

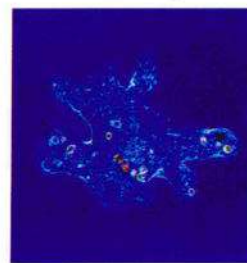


Fig. (B)

Question 3

A When does the following happen ... ?

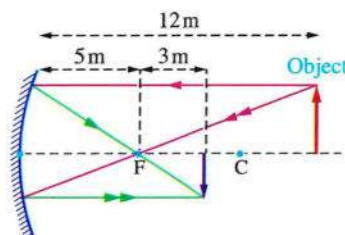
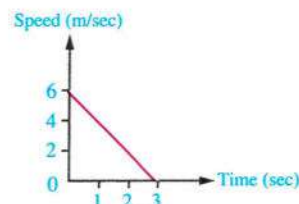
1. The object motion is considered as the simplest type of motion.
2. Reflection of an incident light ray with an angle equals zero.
3. Milky Way galaxy took its disk shape.

B 1. In the opposite graph :

1. Calculate the acceleration by which the object moves.
2. Mention one use of the concave mirror.

C 1. In the opposite figure :

1. Calculate the distance that the object moves towards the mirror in order to form real, inverted and equal image.
2. Interphase precedes the cellular division, explain that.



Question 4

A Correct the underlined words :

1. Equal image is formed for an object at a distance of 10 cm from a concave mirror whose diameter of curvature is 5cm.
2. The two gases forming the galaxies are hydrogen and oxygen.
3. The nebular theory is attributed to chamberlain.

B 1. In the opposite table :

1. Recorded for an object moves with a regular speed, complete the table.

	Distance	Time (ses)	Speed (m/s)
(X)	100		100
(Y)		0.5	

2. Mention the mathematical relation between the angle of incident of a light ray and its angle of reflection.

C Answer the following :

1. The relative speed of a car is 80 Km/h, calculate the actual of the car when observer moves in the same direction of the car with a speed of 30 km/h.
2. What happens when removing the nucleus of a somatic cell ?

5 Menofia Governorate

Answer the following questions :

Question 1

A Choose the correct answer :

1. From the scalar physical quantities
 a. velocity. b. force. c. focal length. d. displacement.

2. A person stood in front of a plane mirror at distance of (5 meters), a virtual image was formed for him at position (A), and when he moved a distance of (2 meters) towards the mirror, a virtual image was formed for him at position (B), so the distance between positions (A) and (B) equals

- a. 5 meters. b. 3 meters. c. 7 meters. d. 2 meters.

3. The cell which contains half the number of chromosomes is resulted from

- a. anther cell. b. skin cell. c. liver cell. d. stomach cell.

B 1. **In the opposite figure :**

An object moved from A to D passing through points B and C at a specific time.

Is the speed of the object equals to its velocity?

Explain your answer.



2. **What is meant by ... ?**

The secondary axis in a concave mirror.

C **Answer the following :**

1. It is hard to apply regular speed practically, explain.
2. An ovary cell in a flower with a number of chromosomes (2 N) divided by meiotic cell division, calculate the total number of chromosomes of the resulting cells in telophase II.

Question 2

A **Correct the underlines words :**

1. The lens whose diameter of curvature is (20 cm), has a focal length of (10 cm).
2. The Sun is the origin of the solar system according modern theory.
3. The number of cell divisions required to produce (128 cells) from one cell of liver cells is equal to (12) **cell divisions**.

B **Problems :**

1. An object moves by (10 m/s) speed, calculate the time required for its speed to become double, knowing that the object moves with an acceleration equals (2 m/s²).
2. Calculate the relative speed of a car if its speed (80 km/h) relative to an observer moving in the same direction by speed (50 km/h).

C **Answer the following :**

1. What are ... ?
The results of the crossing over phenomenon.
2. What happens when ... ?
The radius of curvature of the surface of the eye lens increases than normal.

Question 3

A **Put (✓) or (x) :**

1. The speed units are equivalent to the acceleration units. ()
2. The angle of reflection is equal to zero when the incident light ray falls perpendicular to the reflected light ray. ()
3. The crossing star theory is more recent in time than the nebular assumptions. ()

- B** 1. The following table describes the distances traveled by a moving body and the periods of time, what is the type of the speed of this moving body ? And calculate its value.

Distances covered (meter)	20	45	55
Periods of time (seconds)	1	2	3

2. Mention the properties of the image formed by a convex mirror.

C Answer the following :

1. Explain with drawing only the image formed for an object placed in front of a concave lens.
2. Compare between the general structure of the chromosome and its chemical structure.

Question 4

- A Choose from column (B) what suits it in column (A) :**

Column (A)	Column (B)
1. The optical piece which is used to correct long-sightedness	a. centrifugal force.
2. The reason for the nebula to lose its spherical shape	b. gravity.
3. The reason for the increase in masses resulting from the merged matter at the beginning of the universe.	c. concave lens.
	d. convex lens.

C Answer the following :

1. When does the acceleration of a moving body equal zero ?
2. A body is placed in front of a concave mirror at a distance of 10 cm from the pole of the mirror, so a real inverted image equal to the body was formed.
Calculate the focal length of the mirror.

C Answer the following :

1. What is the distance covered by a light ray through three seconds, if you know that the speed of light is 300000 km/s ?
2. What is the type of asexual reproduction in each of Euglena - Hydra ?

6 Dakahlia Governorate

Answer the following questions :

Question 1

- A Cross out the odd word, and write the scientific term for the rest :**

1. The eye – Telescope – Solar oven – Medical glass
2. Car its weight is 5000 N – It covers a road its length 120 Km – In a time 2 hours – Degree of temperature 40°C
3. Nervous cells – Skin cells – Stomach cells – Muscles cells

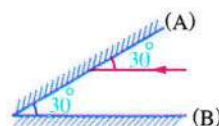
- B 1. In the opposite figure :**

- a. What is the type of the division represented this phase ?
- b. What is the final resultant of this process after ending all phases ?



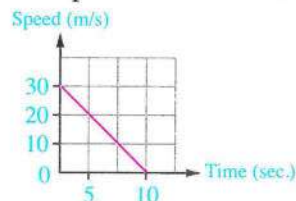
- 2. In the opposite figure :**

Tracing the path of incident light ray that falls on the mirror (A), and calculate the reflected angle on the mirror (B)



C Correct the underline words :

1. The sperm and the ovum share in the formation of zygote by a ratio 1:2 respectively.
2. A person moves from a starting point 20 m west, then return back on the same road 8 m east, so the difference between the distance and the displacement equals 14 meters.
3. The ratio between number of produced cells from 4 successive divisions of a liver cell of a rabbit to the number of produced cells from complete division of a reproductive cell of the rabbit equals 5 ÷ 2
4. In the opposite figure the acceleration of the object equals zero.



Question 2

A Choose the correct answer :

1. In a clock, if the length of the hand of seconds is 3 cm, so the time taken by the hand of seconds to cover a displacement of 6 cm equals
a. 60 sec. b. 30 minute. c. half a minute. d. quarter hour.
2. A spherical mirror forms an inverted image its length 3 cm for an object its length 9 cm, when the object is placed at 20 cm from it, so the probable focal length of the mirror is
a. 15 cm. b. 20 cm. c. 10 cm. d. 7 cm.
3. Number of chromosomes are reduced to half in of meiosis division.
a. metaphase I b. anaphase I c. telophase I d. anaphase II

B Give reasons for :

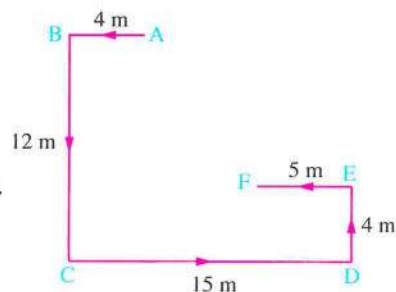
1. The word AMBULANCE is written in a laterally inverted way on the ambulance car.
2. There are no new races of grape when they reproduce by vegetative reproduction.

C In the opposite figure :

An object moves from point A to point F passing by points B, C, D, and E in (8 sec.)

Calculate :

1. Average speed.
2. Average velocity.



Question 3

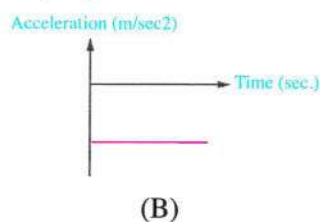
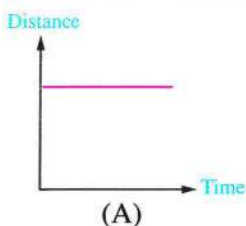
A Write the scientific term for each of the following :

1. A vision defect results due to the increase of the eyeball diameter than the normal.
2. A special organ of reproduction in fungi and algae produce spores.
3. The continuous separation between galaxies as a result of their regular movement.

B Mention one function of the following :

1. Interphase in cell division.
2. Speed and direction of the wind to pilots of the planes.
3. Centrosome in the animal cell.

C 1. Describe the motion of the object in the following figures :



2. An object is placed at the mid distance between a plane mirror and the optical centre of a convex lens its diameter of curvature equals 60 cm, an image for the object is formed by the plane mirror at a distance of 20 cm from it, show by drawing the properties of the formed image of the object by the convex lens.

Question 4

A Complete the following :

- Hydra reproduces by , while amoeba reproduces by
- When the incident light ray on a plane mirror is perpendicular to the reflected light ray , so the angle of incidence equals and angle of reflection equals
- If a car moves at a speed of 75 Km/h in a certain direction and it seems to an observer at a speed 15 km/h , therefor the speed of the observer is km/h and moving in the direction of the car.

B Compare between each of the following : (fill the table)

1.	P . O . C	Laplace theory	The crossing star theory
	Origin of the solar system		
2.	P . O . C	Real focus	Virtual focus
	Definition .		

C In the following figure :

An object moves with uniform speed from point (A) to point (B) and it cover 60 m distance in 12 sec., then it moves with uniform acceleration from point (B) to point (C) according to the relation [$a = 20 \div t$] calculate :

- The regular speed in the period AB.
- The final speed in the period BC.



7 Sharkia Governorate

Answer the following questions :

Question 1

A Correct the underlined words :

- If the incident light beam is coincident on the perpendicular, then the angle of the incidence is equal to 30 degrees.
- Scientists were able to trace the history of the origin of the universe from the first moments of its origin as a result of progress in biology and chemistry.
- If a body moves in a circular path for half a cycle, so the ratio between its displacement and its distance is equal to $\frac{5}{9}$.

B Give reasons for :

- Acceleration is a vector physical quantity, while mass is a scalar physical quantity.
- A convex mirror is placed at the corners of narrow roads.

- C** 1. Two bodies A and B each move at a constant speed as follows :
 Body A moves according to the relation d equals $\frac{t}{2}$
 Body B moves according to the relation d equals $2t$,
 calculate the ratio between the speed of body B to the speed of body A, knowing that the time of the movement is constant.
2. What is the aim of the second meiosis division ? Then mention the name of each cell resulting from it.

Question 2

A Write the scientific term for each of the following :

1. The regular speed by which an object moves to cover equal distances at the same periods of time.
2. A form of asexual reproduction in which the parent individual disappears.
3. The light ray that bounces off the reflecting surface.

B 1. Give reasons for :

A car moving at a certain speed appears static to an observer moving by the same speed and in the same direction.

2. Compare between a convex lens and a concave lens in terms of :

(Definition - The type of the principal focus - The type of the images that is formed).

- C** 1. A body moved with a constant acceleration during 11 seconds and its speed reached 3.6 km/h after five seconds. At the end of its movement, the speed reached 1.3 m/s.
 Calculate the speed of the body at which it starts to move.
2. What happens for ... ? A bread mold fungus after rupturing of its sporangia.

Question 3

A Complete the following statements :

1. A person traveled a distance of 300 meters east in 20 seconds, then returned to the starting point in 40 seconds. The average speed during the trip of going equals m/s.
2. The mirror used by the dentist during the examination.
3. Scientists believe that the beginning of the universe was a ball of high pressure and temperature.

- B** 1. An object placed in the middle of the distance between two mirrors one of them is concave and the other is plane, so an image equal to the object was formed in both cases. the distance between them is 16 cm.

Detect the position of the body from the concave mirror and calculate its focal length.

2. Explain with a graph the relation (distance - time) for an object moving at a constant speed and then stop moving.

- C** 1. When an object is placed in front of a convex lens, no image appears on the screen.
 Detect the position of the body relative to the lens, draw the path of the rays and mention the properties of the formed image.

2. In a phase of cell division, every two similar chromosomes moved away from each other as the spindle fibers contracted where one chromosome moved to a pole of the cell and the other chromosome moved to the other pole of the cell.

- What is the name of this phase ?
- What is the number of chromosomes in each one of the resulting cells, if you know that the original cell has 46 chromosomes ?

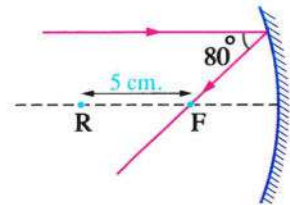
Question 4

A Choose the correct answer :

- A body of 5 cm length is placed at 6 cm from a convex lens with a focal length of 4 cm, so the length of the formed image is cm.
 - 3
 - 4
 - 5
 - 6
- Galaxies began to form after million years after the Big Bang.
 - 3000
 - 5000
 - 10000
 - 15000
- If the number of chromosomes in the zygote cell of a plant is 8 pairs, then the number of chromosomes in the pollen cell of this plant is
 - 8 pairs.
 - 8 chromosomes.
 - 16 chromosomes.
 - 4 chromosomes.

B In the opposite figure, Complete :

- The focal length equals
- The diameter of curvature of the mirror equals
- The angle of the incidence equals



2. What happens to ... ?

The speed of a moving body if the time taken increases to double to cover half the distance.

- Explain with drawing and writing the labels, the steps of the crossing over phenomenon.
- A car moved at a constant speed and covered a distance of 4800 meters in 2 minutes, then the driver pressed the brakes and its speed decreased at a rate of 2 m/s every 4 seconds, calculate the time required for the car to stop.

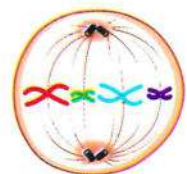
8 Gharbia Governorate

Answer the following questions :

Question 1

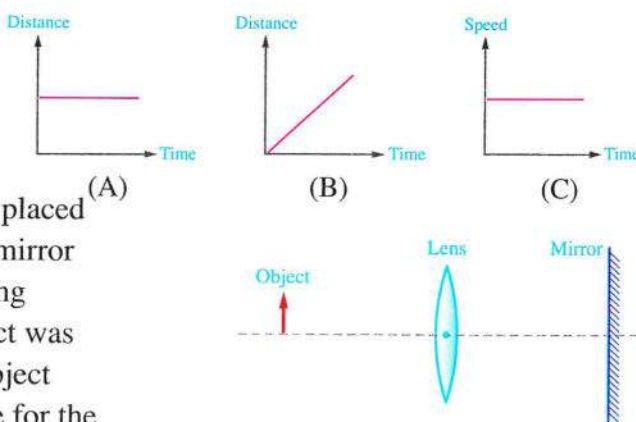
A Complete the following statements :

- We resort to the term average speed when the body moves at a/an speed.
- A person put a pen in his left pocket and stood in front of a plane mirror, an image was formed in which the pen appeared on the side.
- The opposite figure represents one of the stages of cell division, the stage follows this stage.



B Answer the following :

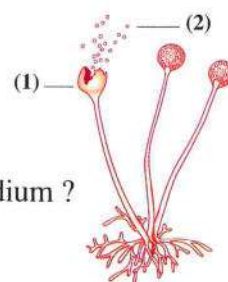
1. Compare the movement of the body that is represented by the opposite graphs.
2. **The opposite figure** shows an object placed in front of a convex lens and a plane mirror was placed behind it, and when looking into the mirror, no image for the object was formed. What is the position of the object relative to the lens, and why no image for the object is formed inside the plane mirror ?



C Answer the following :

1. An object moved in a straight line, and the distances it traveled were recorded at several periods of time, as shown in the opposite table, draw the relationship graphically, then calculate the object's speed.
2. **The opposite figure** shows the structure of an organism, write what the numbers (1) and (2) indicate, then explain what happens when the structure (2) falls on a suitable medium ?

Distance in meter	10	20	30	40	50	60
Time in second	5	10	15	20	25	30



Question 2

A Write the scientific term for each of the following :

1. Any straight line passing through the centre of curvature of the mirror and any point on its reflecting surface except the mirror's pole.
2. The theory that explains the origin of the solar system by the scientists Chamberlain and Moulton.
3. The number of days lived by the laboratory mice that remained infected with cancerous cells.

B Answer the following questions :

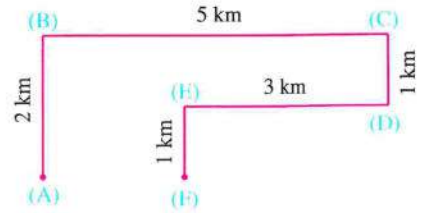
1. Two trains are moving on parallel tracks, in opposite directions. If the speed of the first train is 60 km/h, and the speed of the second train is 90 km/h, calculate the speed of the first train as it is observed by the passengers of the second train.
2. An old man suffers from difficulty in seeing, and the doctor told him that the lens of the eye become opaque. What is the name of the eye disease, and what does the doctor has to do for the old man to see clearly again ?

C Answer the following :

1. A car was moving at a speed of 6 m/s. Its driver was surprised by a person coming out of a side (lateral) street, so he pressed the brakes and the car stopped after 12 seconds, calculate the acceleration with which the car moved, and what is the type of acceleration (assuming that the speed of the car changed regularly).

B Answer the following :

1. The opposite figure shows the path taken by a car from point (A) to point (F) passing through points (B, C, D, and E). Which is greater the distance traveled by the car or its displacement, with explanation.
2. If the angle between the reflected light ray and the reflecting surface is 40° , calculate the angle of incidence and explaining your answer with drawing.



C Answer the following :

1. **Compare between** the scalar physical quantity and the vector physical quantity (in term of the definition).
2. **In the opposite figure**, if all the arms of 50 individuals starfish were cut off and 35 of them their cut arms containing a part of the central disc, while the rest of the individuals their cut arms not containing a part of the central disc, what is the total number of the resulting complete organisms ? With the explanation ?



9 Damietta Governorate

Answer the following questions:

Question 1

A Choose the correct answer :

1. The ratio between the displacement covered by a body to the time taken to cover this displacement equals
a. the acceleration. b. the speed. c. the velocity. d. the average speed.
2. You noticed that your father put the book away from his eyes during reading. This means that he suffers from
a. decreasing the convexity of eye lens. b. increasing the convexity of eye lens.
c. cataract disease. d. increasing the diameter of the eyeball.
3. The number of divisions that a bacterial cell divides to produce 32 new individuals are
a. 4 divisions. b. 5 divisions. c. 6 divisions. d. 8 divisions.

B Give reasons for :

1. Archimedes used a concave mirror to burn the sails of the Roman fleet.
2. The person who runs for minutes then walks for other minutes, moves with negative acceleration.

C Answer the following :

1. An object moves on the circumference of a circle with diameter equals 14 cm., if this object covers a distance equals 66 m, find the number of cycles that the object moved.
2. Mention only one difference between the prophase of a cell in a plant stem, and the prophase of a cell in an animal skin.

Question 2

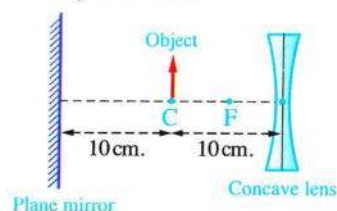
A Complete the following :

1. The ratio between the diameter of a spherical mirror and its focal length equals
2. Fred Hoyle based his theory about the evolution of the solar system on scientific fact, which is
3. The ratio between the number of the produced cells from two cellular divisions of a skin cell, and that produced from one cellular division of a testis cell equals

B Calculate the following :

1. If a person stood on the top of a building its height equals 20 m, and he throw a ball up to height equals 10 m, then the ball falls down and stopped on Earth's surface below the building, find both the distance and the displacement covered by the ball.

2. In the opposite figure, determine the ratio between the length of the formed image for the object by the plane mirror, and that is formed by the concave lens.
(greater than - smaller than - equal to) one ?
With the reason?



C What are the results that relate to ... ?

1. An object that moved in a straight line in one direction, (according to the speed and the velocity).
2. A person that infected with liver fibrosis disease and need a liver doner, (according to the doner person affected with any harm ? And why ?)

Question 3

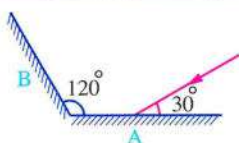
A Correct the underlined words :

1. The founder of modern theory of the evolution of solar system in Laplace.
2. An object placed at a distance equals 10 cm in front of concave mirror and its diameter equals 40 cm, the formed image is virtual and magnified.
3. A train with length 100 meters, moves at speed of 10 m/s starts to cross a tunnel with a length of 1 km, so the time needed to pass the train completely from the tunnel equals 100 second.

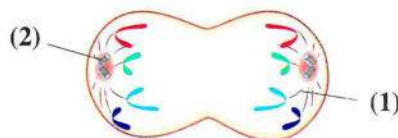
B When the following happens ... ?

1. Forming a virtual, diminished image for a person stands in front of mirror.
2. The relative speed of a car equals three times the speed of an observer who moves at a speed equals 10 km/hr.

C



1. In the periscopic figure, follow the path of the light then calculate the angle of reflection on mirror (A) and on mirror (B).



2. In the periscopic figure:
- Mention the name of the phase.
 - What is the importance of structure (1) and structure (2) ?

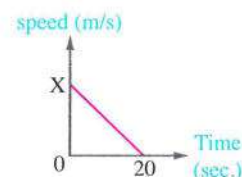
Question 4

A Mention the number that indicates each of the following :

- The covered distance by light through three light years.
- The distance between the image and the plane mirror if the distance between the object and its image equals 10 m.
- The number of rotations of the solar system around the centre of Milky Way galaxy since its formation according to Big Bang theory.

B Answer the following :

- From the opposite figure :
If a car moves at acceleration equals -2 m/s^2 , calculate the value of speed at point (x) ?
- Explain by drawing the paths of light rays that form an image of an object placed in front of convex lens at distance equals the double of focal length, and mention the properties of the formed image.



C Compare between :

- The yeast fungus and the hydra (according to the similarities and differences).
- The relative speed and the average speed (according to definition).

10 Kafr El-Sheikh Governorate

Answer the following questions :

Question 1

A Put (✓) or (x) :

- The distance and the time are the two basic factors necessary to describe the movement. ()
- Multicellular living organisms contain two types of cells. ()
- In the centre of our galaxy a lot of new stars gather surrounded by small stars. ()

B Give reasons for :

- The universe in a state of continuous expansion.
- Physicists use mathematical methods like graphs and tables.

C Compare between :

1. The principal axis and the secondary axis of the spherical mirror (according to definition).
2. Formation of gametes in human and flowering plants (according to the type of division and the organ in which it occurs).

Question 2

A Choose the correct answer :

1. It is preferable to express the term of irregular speed by the term of speed
a. uniform b. vector c. average d. scalar
2. According to Laplace theory the nebula lost its sphere form due to force.
a. centrifugal b. centripetal c. magnetic d. nuclear
3. The offspring resulting from sexual reproduction get the genetic traits from
a. one source. b. two sources. c. three sources. d. four sources.

B When each of the following values equals "zero":

1. The reflecting angle of a light ray falls on a reflecting surface of a plane mirror.
2. The reflecting angle of an incident ray falls on a reflecting surface of a concave mirror.

C 1. "The velocity is the speed in a specific direction"

How true is this concept ? Explain that ?

2. Two race cars, the first car moves at a speed of 80 km/h, while the second car moves at a speed of 120 km/h, in the same direction. Calculate :

First : The relative speed of the first car relative to an observer standing on a side of the road.

Second : The relative speed of the second car relative to a passenger in the first car.

Question 3

A Correct the underlined words :

1. The magnitude of distance equals the shortest straight line between two positions.
2. The mirror has two centres of curvature due to it has two spherical faces.
3. Fred Hoyle used the fact of explosion of stars to explain evolution of the universe.

B What is the condition for each of the following to occur ... ?

1. Regeneration the arms of starfish to complete starfish.
2. Rupturing of the sporangia and spores growth in mushrooms.

C 1. What is the importance of crossing over phenomenon in meiosis division ?

2. A car starts to move from rest in a straight line and its speed reaches 12 m/sec. after 4 sec. Calculate the acceleration of the car and detect its type ?

Question 4

A Complete the following :

1. Vision defects occur because the eye lens is not always.....

- The solar system was originally a big star which is the Sun according to theory
- Before starting mitosis division the cell passes through to prepare the cell for division.

B What happen in these cases ... ?

- To the displacement of a moving body when it returns back to the starting point.
- Explosion of the expanded part of the Sun faced the crossing star according to Chamberlain and Moulton theory.

C

- How does our galaxy takes a distinctive shape " ?
Describe our galaxy and locate our solar system within it.
- An object is placed at a distance of 8 cm from a concave lens its focal length 2 cm show by drawing the position of the formed image and mention the properties of this image by drawing two light rays only ?

11 Behira Governorate

Answer the following questions :

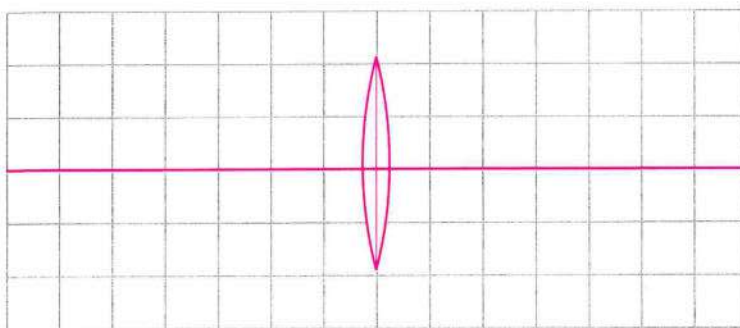
1. **Put (✓) or (x) :**

The scientist Laplace was affected by the shape of the planet Mercury when formulating his theory. ()

2. **In the following figure :**

An object of length 2 cm is placed at a distance 5 cm in front of a convex lens of focal length 2 cm.

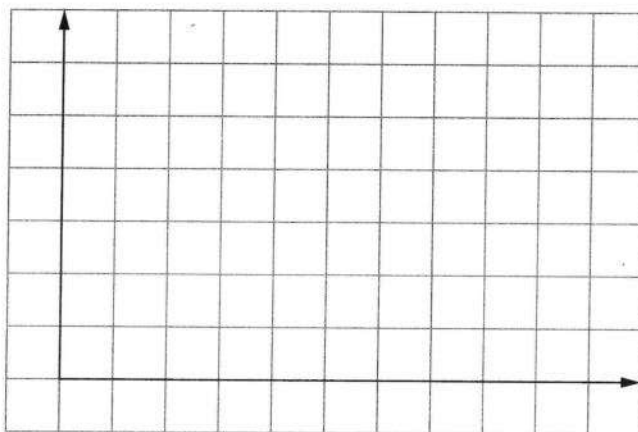
- Draw the path of the light rays falling on the lens to form the image ?
- Mention the properties of the formed image.



- If a car travels a distance of 120 km in two hours, then the car returns half the distance in an hour. Calculate the car average speed.
- The opposite table represents the relation between speed and time for a moving body in a straight line, in the following figure :

Speed (m/s)	20	15	10	5	0
Time (s)	0	2	4	6	8

- Draw the graphical relation between speed on (y-axis) and time on (x-axis).
- From the graph, mention the type of acceleration for this body.



5. **Correct the underlined word :**

The rays converge after passing through the convex lens at a point called the optical centre of the lens.

6. **Choose the correct answer :**

The number of cells resulting from 3 successive divisions of a somatic cell equals

- a. 9 cells. b. 6 cells. c. 8 cells. d. 12 cells.

7. A car moved with an acceleration of 6 m/sec^2 . If its final speed is 50 m/sec . after 5 seconds, calculate its initial speed.

8. **Write the scientific Term :**

Asexual reproduction occurs by different parts of plants without the need for seeds.

9. **Choose the correct answer :**

A person stood 2 meters away in front of a plane mirror, an image is formed to him. What is the distance between the person and his image if he moves a distance of 50 cm towards the mirror ?

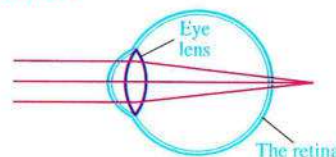
- a. 2 meters. b. 4 meters. c. 3 meters. d. 6 meters.

10. **Answer the following question :**

If a train covers a distance of 200 km in 120 minutes. Calculate its speed by (km/h).

11. **Look at the opposite figure, then answer the following questions :**

- a. Mention the type of vision defect.
b. Explain how it can be corrected.



12. **Read the following statement carefully, then answer :**

"The crossing over phenomenon plays an important role in the diversity of genetic traits among individuals of the same species."

- a. Explain this statement on a scientific base.
b. Indicate the type of cell division in which crossing over phenomenon occurs.

13. An observer was standing on the side of a road and a car at 100 km/h passed in front of him.

- a. Calculate the relative speed at which the observer saw the car, while he was stationary.
- b. Calculate the relative speed at which the observer saw the car, if he moved at a speed of 80 km/h towards the car.

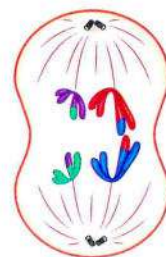
14. **Read the following statement, then answer the following questions :**

A plane took off from Cairo Airport to Dubai Airport. It was traveling against the wind.
What are the changes that occur in ?

- a. The plane's velocity
- b. The time taken for the flight
- c. The amount of consumed fuel

15. **Look at the opposite figure, then answer the following questions :**

- a. What is the name of this phase ?
- b. What is the changes occurring in this phase ?

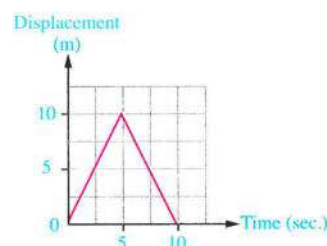


16. **Correct the underlined word :**

The Milky Way galaxy has an elliptical shape.

17. **Study the opposite graph, then answer the following questions :**

- a. Calculate the total distance.
- b. Calculate the velocity through the first five seconds.



18. **Write the scientific Term :**

The straight line passing through the centre of curvature of the mirror (C) and its pole (P).

19. **Choose the correct answer :**

A plane started its flight at eight in the morning. It was moving at a speed of 800 km/h.
To cover a distance of 1600 km, so its arrival time will be at.....

- a. Three (pm).
- b. Ten (am).
- c. One (am).
- d. One (pm).

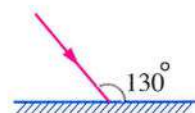
20. **Put (✓) or (x) :**

The focal length of a concave mirror is 5 cm, so its diameter is 10 cm.

()

21. **The opposite figure shows a light ray falls on a plane mirror :**

- a. Trace the bouncing light ray off the mirror ?
- b. Calculate the angle between the incident and reflected light rays ?



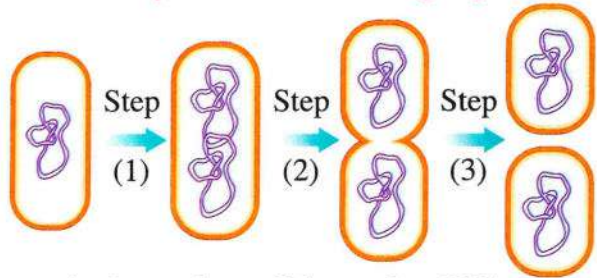
22. **Correct the underlined word :**

When a body makes a complete revolution in a circular path of diameter equals 10 meters,
so the displacement is 10 meters.

23. The opposite figure represents one type of asexual reproduction in a living organism :

- a. Mention the steps of this type of asexual reproduction in this organism as shown in the figure in :

step (1)
 step (2)
 step (3)



- b. If you know that the number of chromosomes in the mother cell is equal to $(2N)$, so how many chromosomes in the cells resulting from reproduction in this organism ?

24. A bright candle is placed at a distance of 20 cm in front of a convex mirror with a focal length of 40 cm. Then it is placed again at a distance of 90 cm in front of the same mirror. What are the properties of the image formed in both cases ?

25. Mention the type of light piece used in solar oven ? Then explain its importance ?

26. Put (✓) or (x) :

The two gases that formed galaxies and stars were oxygen and helium.

()

27. Compare between somatic cells and reproductive cells in terms of :
 (type of division - importance of each division)

Points of comparison	Somatic Cells	Reproductive cells
Type of division		
Importance of division		

28. Write the scientific Term :

Telescope was launched in April 1990 and rotates around the Earth at a height of 500 km.

12 Ismailia Governorate

Answer the following questions :

Question 1

A Choose the correct answer :

- The chromosome is chemically consists of nucleic acid and protein.
 a. HNO_3 b. H_2SO_4 c. DNA d. HCl
- If the focal length of a concave mirror equals 5 cm, so its diameter equals cm.
 a. 5 b. 10 c. 15 d. 20
- Car (A) moves with a speed of 80 km/h, and car (B) moves with a speed of 40 km/h in the same direction of car (A), so the speed of car (A) relative to an observer in car (B) equals km/h.
 a. 30 b. 40 c. 80 d. 120

B When does each of the following happen ... ?

- The displacement of a moving body equals zero.
- No image for a body is formed by a concave mirror.

C Compare between :

1. Animal cell and plant cell (According to the way of spindle fibers formation).
2. Mass and force (According to the type of physical quantity).

Question 2

A Write the scientific term of each of the following :

1. A form of asexual reproduction, which is more common in some fungi and some algae.
2. A theory suggested that the origin of the solar system was a glowing gaseous sphere revolving around itself.
3. An imaginary point, inside the lens on the principal axis in the mid-distance between its two spherical faces.

B Look at the figures, then answer :

1. In the opposite figure mention :
 - The type of vision defect ?
 - The most important reasons for this defect ?
 - The type of the lens used to correct this defect ?
2. Describe the body state in each figure :

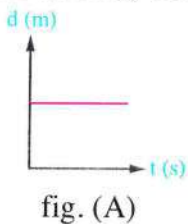
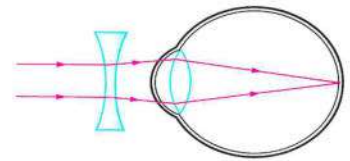


fig. (A)

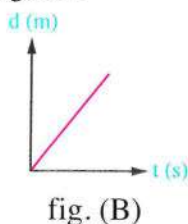


fig. (B)

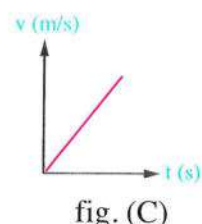


fig. (C)

C Give reasons for :

1. Moving cars can't move inside towns all the time by uniform speed.
2. Zygote contains the complete hereditary material.

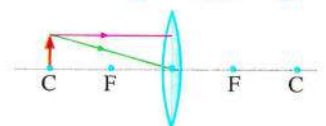
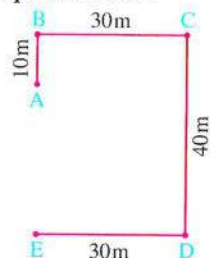
Question 3

A Complete the following sentences :

1. Virtual, equal and erect image is formed in mirror.
2. galaxy contains millions of stars including the Sun.
3. If a body takes half the time to cover the double distance, so its speed equals of its origin speed.

B Answer the following :

1. In the opposite figure, if a person covers the path (A - B - C - D - E) in 6 seconds, so the difference between the value of distance and the value of displacement equals, and its velocity equals
2. Draw the opposite figure in your answer paper then :
 - Complete the path of refracted rays to obtain an image.
 - Mention the properties of the formed image.



C Mention the importance or uses of each of the following :

1. Mitosis cell division.
2. The convex mirror.

Question 4

A Correct the underlined words :

1. Contact lenses are put directly on eye pupil.
2. Saturn planet is the planet of life.
3. According to Big Bang theory, within minutes from the origin of the universe, the ratio of hydrogen and helium is 60% , 40% respectively.

B Define each of the following :

1. Acceleration.
2. Cataract disease.

C What are the results of ... ?

1. A plane flies in opposite direction to wind, according to time of the trip and amount of consumed fuel.
2. The parts of the two inner chromatids of each tetrad are exchanged in the first prophase in meiotic division.

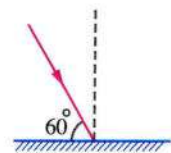
13 Suez Governorate

Answer the following questions :

Question 1

A Choose the correct answer :

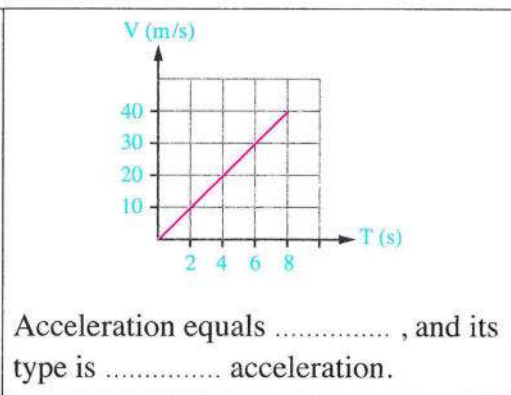
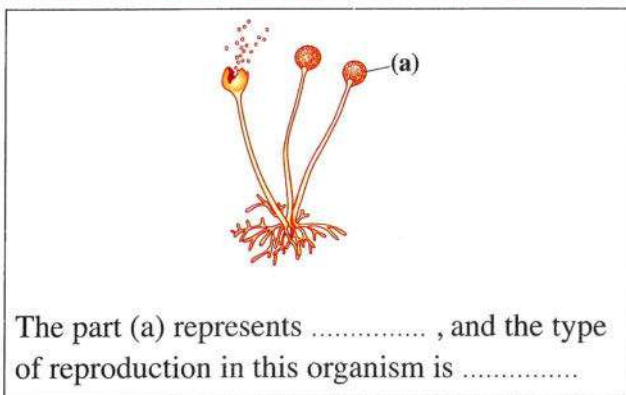
1. If a light ray falls on a plane mirror as shown in the figure, then the value of the angle of reflection equals
a. 60° b. 30° c. 90° d. 120°
2. division occurs to form sperms.
a. mitosis – in the testes b. mitosis – in the ovary
c. meiosis – in the testes d. meiosis – in the ovary
3. The two factors which can be used to describe the motion of a body are
a. distance and time. b. speed and time.
c. area and time. d. displacement and speed.



B What is meant by ... ?

1. A car covers a total distance of 110 Km every hour.
2. The focal length of a concave mirror is 15 cm.

C Study the following figures, then complete the question below.



Question 2

A Correct the underlined words :

1. The nucleolus disappears during the mitotic cell division in telophase.
2. The modern theory of the scientist Fred Hoyle explains the origin of the universe.
3. The light ray passing through the centre of curvature of the concave mirror is reflected parallel to the principal axis.

B Give reasons for :

1. Uniform speed of a car is difficult to be achieved in practice.
2. When an object placed at the focus of a convex lens, no image is formed.

C Write the suitable number in each of the following :

1. If the number of chromosomes in a skin cell is 23 pairs of chromosomes, what is the number of chromosomes in each of the following cells ?
 - The nucleus of an ovum cell contains chromosomes.
 - The nucleus of a zygote cell contains chromosomes.
2. A concave mirror has a diameter of 12 cm, so
 - The radius of curvature equals cm.
 - The focal length equals cm.

Question 3

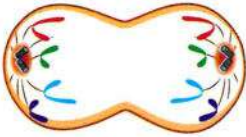
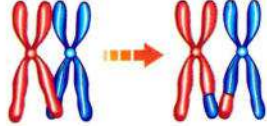
A Choose from column (B) what suits it in column (A) :

(A)	(B)
1. The reproduction in yeast fungus	a. is binary fission.
2. The nucleic acid (DNA)	b. is used instead of the medical glasses.
3. The contact lens	c. is carrying genetic information of the living organisms.
	d. is budding.

B Give one example of each of the following :

1. Optical piece that is used to correct short-sightedness.
2. Optical piece that always forms virtual, erect and equal image of the body.

C Look at the following figure, then complete below :

 1. The name of this phase is , and this phase belongs to division	 2. The name of this phenomenon , and its importance
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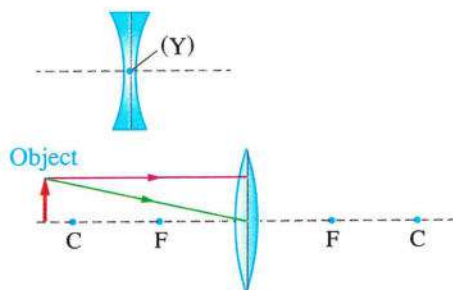
Question 4

A Write the scientific term for each the following :

1. It contains all stars that we see in the sky at night.
2. The displacement travelled by a body in one second.
3. Reproduction that produces offspring that is completely identical to the parents.

B You have optical pieces as shown in the figure :

1. The point (Y) is called and its focus is
2. Transfer the opposite drawing in your answer paper and complete the path of refracted light rays, and mention the properties of the formed image.



C Answer the following question :

1. A racer covered a distance of 100 m running in a time of 10 seconds, then he returned to the starting point walking, taking 80 seconds, calculate the average speed of the racer through whole trip.
2. Compare between concave mirror and convex mirror.
(according to : location of its centre of curvature - its reflecting surface)

14 Port said Governorate

Answer the following questions :

Question 1

A Correct the underlined words :

1. The solar system is located in one of the circular arms of the Milky Way galaxy.
2. The contact lenses are put directly on the eye retina to correct the vision defects.
3. Violent and sudden chemical reactions take place inside the star and lead to its explosion.

B 1. How do you explain:

- The difference in the amount of the fuel consumed by a plane during its flying between two cities according to the difference in wind direction.
- A hollow glass ball its external surface is reflective and it has a diameter of 40 cm, a part was cut from this ball in the form of a mirror.
Find the focal length of this mirror and mention its type.

- C** 1. What are the two types of reproduction shown in the two opposite figures ?
2. Find the average speed of a car that covered a distance of 45 km in two hours, and then covered a distance of 60 km in 4 hours.



Fig. (1)



Fig. (2)

Question 2

A Write the scientific term for each of the following :

1. An optical piece that is used to correct vision defect in which the image is formed in front of the eye retina.
2. A glowing gaseous sphere revolving around itself and is considered as the origin of the solar system according to Laplace theory.
3. A vector physical quantity that is equal to the value of displacement in one second.

- B** 1. If a person moves from a starting point 20 meters westward, then he returns on the same road 8 meters eastward.
Calculate the difference between the displacement and the distance covered.
2. What are the uses of the concave mirror ? (Only three uses are enough).

- C** 1. If the number of chromosomes in the nucleus of a human ovum is 23 chromosomes. What is the number of chromosomes in the nucleus of a liver cell and the nucleus of a zygote ?

- Nucleus of a liver cell :
- Nucleus of a zygote :

2. Determine the direction of the reflected light rays in figures (1) and (2).

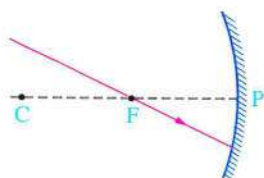


Fig. (1)

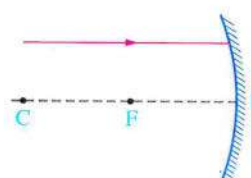


Fig. (2)

Question 3

A Complete the following sentences :

1. The scientist founded the modern theory that explains the origin of the solar system.
2. If the angle between the incident light ray and the reflected light ray on a plane mirror is 140° , the angle between the incident ray and the reflecting surface will be
3. A series of adverse changes take place during the of mitosis.

- B** 1. When the relative speed of a moving object equals double (twice) the value of its actual speed ?
2. **Give a reason for the following :** When an object is placed at a distance equals the focal length of a concave mirror, the image will be in the form of a light spot.

- C** 1. A train started a journey 200 km long at 6 O'clock in the morning with a speed of 40 km/hr. Find the time at which the train will arrive to its final destination.

2. **What happens if ... ?**

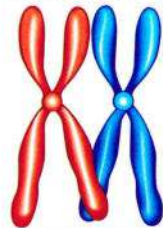
The cell does not pass through the interphase before it enters its mitotic division.

Question 4

A Choose the correct answer :

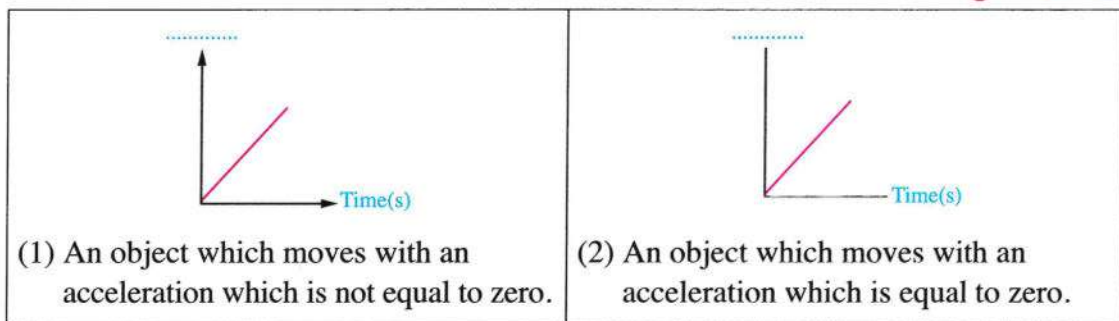
- The concept of motion of an object means the
 a. stability of its position as time passes. b. increasing speed of the object.
 c. change in its position as time passes. d. acceleration of the object.
- We can produce new plants which are exactly similar to the mother plant by using
 a. gamete formation. b. fertilization. c. budding. d. tissue culture.
- Ahmed stood at distance of 3 meters from a plane mirror.
 What is the distance between Ahmed and his image if he moves 0.5 meters closer to the mirror ?
 a. 2.5 m b. 3 m c. 5 m d. 6 m

- B** 1. What are the properties of the image formed by a convex lens if the object is placed between the focus and the centre of curvature ?
2. A car moves with a speed of 50 m/sec. If the driver decreases the car speed with a rate of 2 m/s^2 , find the car speed after 12 seconds.



- C** 1. What is the name of the phenomenon shown in the opposite figure and what is its importance ?

2. Conclude what the vertical axis represents in the following figures :



15 Fayoum Governorate

Answer the following questions :

Question 1

A Choose the correct answer :

- A car moved for two hours and its average speed was 40 km/h. If its speed in the first hour was 20 km/h, then its speed in the second hour was
 a. 20 km/h. b. 40 km/h. c. 60 km/h. d. 120 km/h.

2. Binary fission occurs in unicellular protozoans such as
 a. bacteria. b. paramecium. c. sponge. d. hydra.
3. An object was placed in front of a concave mirror with a focal length of 8 cm, and a virtual image was formed for the object. The distance between the object and the pole of the mirror equals cm.
 a. 4 b. 8 c. 12 d. 16

B Find the value of each of the following :

1. The angle of incidence and also the angle between the incident light ray and the reflected ray, if the angle between the incident ray and the mirror surface equals to 30°
2. The displacement of an object when it makes half-circle and when it makes a complete circle on the circumference of a circle with a diameter of 7 km.

C Compare between :

1. Starfish – Bread mold fungus (in terms of the condition for reproduction).
2. Uniform speed – Non-uniform speed (in terms of definition).

Question 2

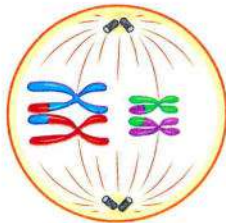
A Write the scientific term for each of the following :

1. An astronomical phenomenon on which the modern theory was built.
2. A vision defect that results from a decrease in the diameter of the eyeball.
3. The phase in which two nuclei are formed, each contains half the original number of chromosomes in the mother cell.

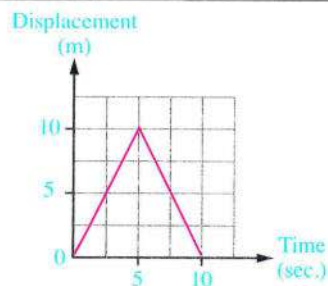
B What are the results of ... ?

1. The fusion of atomic particles after several minutes of the Big Bang.
2. The fall of a beam of light rays parallel to the principle axis on a concave lens.

C Study the following figures, and answer the following questions :



1. What is the name of this phase ?
and what happens in the next phase.

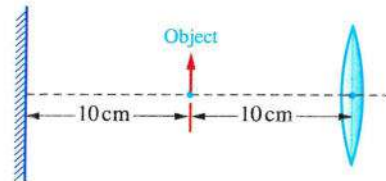


2. Calculate the body's velocity during the first 5 sec., and the total distance traveled until the end of the movement.

Question 3

A Write the number that indicates each of the following :

1. The distance between the image formed for the object by the convex lens and the image formed for the object by the plane mirror, knowing that the focal length of the convex lens is 5 cm.
2. The ratio between the number of chromosomes present in a rabbit ear cell to the number of chromosomes present in an ovary cell.
3. The relative speed of a car moving with a speed of 75 km/h relative to an observer in a car moving with a speed of 35 km/h in the same direction.



B Calculate each of the following :

1. A moving car covers a distance of 200 meters in 4 seconds, when the driver applies the brakes its speed decreases by 2 m/sec^2 , what is the speed of the car after 12 seconds of applying the brakes ?
2. The number of resulting cells and the number of chromosomes in each cell, if two successive mitotic divisions occur for a somatic cell contains 20 chromosomes.

C Mention the name of each of the following :

1. An optical piece used in the manufacture of the telescope, and another placed on the right and left of the car driver.
2. A theory explaining the origin of the universe, and another explaining the origin of the solar system from the Sun.

Question 4

A Complete the following :

1. The incident light ray falls passing through the centre of curvature of a concave mirror is reflected at an angle of , while the incident light ray falls parallel to the principal axis it is reflected passing through
2. The oldest stars gather in the of Milky Way galaxy, while the recent stars are located in
3. revolve around the Sun, while the Sun revolve around

B What is the meant by ... ?

1. The mass of a body is a scalar physical quantity.
2. The distance between the optical centre of a convex lens and its focus equals 10 cm.

C Give reasons for :

1. The cells of a plant stem need mitosis, while the plant anther needs meiosis.
2. The speed of a train moving at 72 km/hour is less than the speed of a car traveling a distance of 30 meters per second.

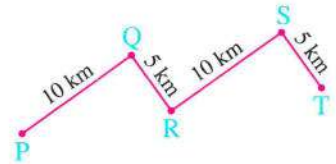
Question 1

1. The centromeres do not divide during the stage of the first meiotic division.
2. The incident light ray falls parallel to the principal axis of the convex lens refracts and passes through
3. Two trains move in two parallel tracks in opposite directions at the same speed, so the relative speed of the first train is the speed of the second train.

1. Mass and Force (in terms of the type of physical quantity).
2. Long-sightedness and short-sightedness (in terms of the position of the formed image relative to the retina).

a. Sperm cell

Write the mathematical law used.



Question 2

a. stems. b. seeds. c. leaves. d. roots.

c. after formation of the solar system. d. after the appearance of birds.

a. 40 b. 75 c. 100 d. 120 cm

A distance-time graph with Distance (m) on the y-axis and Time (sec) on the x-axis. The y-axis has major grid lines every 5 units from 0 to 25. The x-axis has major grid lines every 1 unit from 0 to 5. Two lines, A and B, start at the origin (0,0). Line A passes through the point (2, 25). Line B passes through the point (5, 25).

2. Mention the properties of the formed image by the opposite optical piece.



C What happens if ... ?

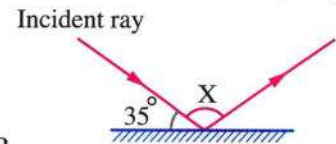
1. An ovary cell divides meiotically (according to the number of resulted cells).
2. A body moves with uniform speed (according to the type of acceleration).

Question 3

A Put (✓) or (✗) :

1. The scientist Laplace publish research entitled (World order) about the origin of the universe. ()
2. The focal length of the thick lens is equal the focal length of the thin lens. ()
3. A car covers a distance of 360 km within 3 hours, so its speed more than a bike moves by a speed equals 25 m/sec. ()

- B** 1. A light ray falls on a plane mirror as the opposite figure. What is the value of angle (X) ?



2. When the covered distance equals the value of displacement ?

- C** 1. An object placed at a distance of 3 cm from the optical centre of a lens, a magnified virtual image is formed for the object, mention the type of lens and show by drawing the path of rays that formed this image.
2. The opposite figures represent two biological processes :

- a. What is the type of asexual reproduction shown in figure (2) ?
- b. What is the result of the fusion of the male and female gametes in figure (1) ?



Fig. (1)



Fig. (2)

Question 4

A Write the scientific term for each the following :

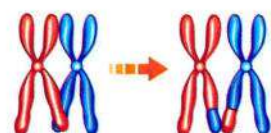
1. The point of collection of the reflected light rays or their extensions.
2. It contains all the stars we see at night in the sky.
3. A theory assumed that the solar system was originally a star rather than the Sun.

B Give reasons for :

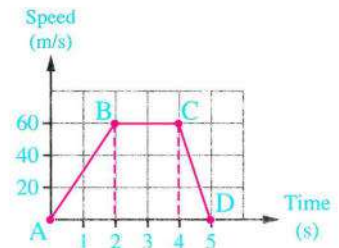
1. No image is formed for an object placed at the focus of a concave mirror.
2. When an object moves where its ending point is its starting point, then its velocity equals zero.

C The opposite figure represents a biological phenomenon :

1. In which phase does this phenomenon occur, and what is its importance ?



2. The opposite graph represents the motion of a car in a straight line during three periods of time, what is the time interval during which the car moves with deceleration motion, and what is the value of it ?



17 Minia Governorate

Answer the following questions :

Question 1

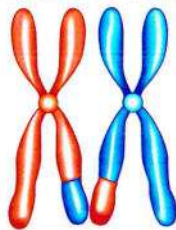
A Complete the following statements :

1. The chemically consists of nucleic acid called DNA and protein.
2. When a body moves at a speed of 36 km/h, this means that it moves at a speed of m/sec.
3. The formed image by a concave lens is always virtual, erect and

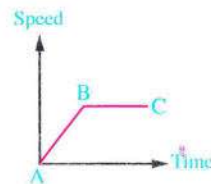
B What are the results of each of the following ... ?

1. Decreasing the diameter of the eyeball.
2. A body moves at a uniform speed (according to its acceleration).

C Study the following figures, then answer the questions below :



1. What is the name of the phase in which this phenomenon happens? And what is the type of this cell division?



2. Describe the state of the body in this figure.

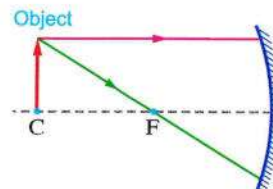
Question 2

A Choose the correct answer :

1. The earliest life forms began to appear on the Earth
 a. before formation of galaxies. b. after formation of solar system.
 c. after appearing of dinosaurs. d. after appearing birds and mammals.
2. The ratio between the length of the formed image to the length of the body in front of convex mirror one.
 a. equal b. double c. more than d. less than
3. is a source of genetic variation
 a. Sexual reproduction b. Vegetative reproduction
 c. Reproduction by binary fission d. Asexual reproduction

- B** 1. If two planes (A) and (B) moved from the same point in two opposite direction, if the amount of consumed fuel by plane (A) is greater than the amount of consumed fuel by car (B) although they covered the same distance. **What is your explanation ?**

2. **Draw the figure in your answer paper**, then complete the direction of the reflected light rays and mention the properties of the formed image.



C Compare between :

1. Length and force (according to the type of physical quantity).
2. Somatic cells and reproductive cells (according to the number of produced cells from cell division).

Question 3

A Write the scientific term for each of the following :

1. They are groups of stars that rotate together in cosmic space by the effect of gravity.
2. The rate of change of distance through a unit time.
3. It is a disease that causes a difficulty of vision as a result of the darkness of the eye lens.

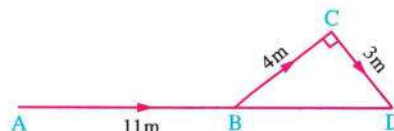
B 1. If you have :

(a concave mirror – a holder for the mirror – measuring tape – light box with a hole)
Show by an activity how to determine the radius of curvature of the concave mirror.

2. **The opposite figure :**

Shows the path of motion of an object, from point (A) to point (D) passing by points (B) and (C), calculate the following.

1. The covered distance.
2. The displacement.



C When does the following happen ... ?

1. Virtual and magnified image is formed for an object by a convex lens (without drawing).
2. If the number of chromosomes in the nucleus of a plant stem cell is (6) pairs of chromosomes. Determine the number of chromosomes in each of the following cell :
 1. The nucleus of a pollen grain.
 2. The nucleus of a zygote.

Question 4

A Correct the underlined words :

1. Under the effect of gravitational force, the nebula lost its spherical shape.
2. The distance between the body and its image in a plane mirror half the distance between the body and the mirror.
3. Within minutes after Big Bang explosion, the ratio between helium and hydrogen gas respectively equal 1:1.

B Cross out the odd word or phrase, then write What links the rest of the words :

1. (Used in solar ovens – Placed on the right and the left sides of the car driver – Used in front lights of cars – Used in dentists clinics).
2. ($\text{m/sec} - \text{m}\times\text{sec}^{-1} - \text{km/h} - \text{m}\times\text{sec}^{-2}$).

- C**
1. Mention one difference between yeast fungus and starfish.
 2. Calculate the actual speed for a car, if its speed seems 120 km/h for an observer moves in the opposite direction at a speed equals 70 km/h.

18 Assiut Governorate

Answer the following questions :

Question 1

A Write the scientific term for each of the following :

1. The force that controls the orbits of planets around the Sun according to modern theory.
2. The phenomenon of exchange of genes between the two inner chromatids of the tetrad.
3. Arrangement, harmony and distinctive shapes of the groups of stars in the universe.

- B First:** Show by drawing the relation (distance - time) graph for an object moves at a uniform speed and then it stops.

Second : An object is placed 6 meters away from a plane mirror, and an image of p_1 is formed for the object.

If both the mirror and the object are moved one meter towards each other, an image of p_2 is formed for the object.

- a. Find the distance between p_1 and p_2 .
- b. Find the ratio between the length of the image and the length of the body.

C 1. Compare between :

The velocity and the average speed (according to the used law and units of measurement).

2. Write one example of :

- a. A multicellular living organism reproduces asexually by budding.
- b. An animal has the ability to compensate its missing parts to give a complete animal.

Question 2

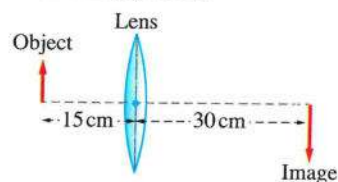
A Complete the following sentences :

1. In the rabbit cells the spindle fibers are formed by , while in the bean plant cells the spindle fibers are formed from at the cell poles.
2. The graphical relation (speed – time) for a uniform speed is represented by a straight line to the axis.
3. The mirror is placed on the platforms of metro (subway) and railway stations to avoid passenger injury at opening or closing the doors, while the mirror is used in solar oven.

B 1. When does this happen ... ?

The distance covered by a body equals the amount of displacement happened.

2. An object is put at 15 cm from the optical centre of a convex lens, a real, inverted and magnified image is formed at 30 cm (greater than double of focal length). Write the properties of the formed image if the object move to left 15 cm away from the lens.



C Give reasons for :

1. The importance of speedometer in cars and planes.
2. Interphase comes before cell division.

Question 3

A Put (✓) or (✗) then correct the wrong ones :

1. The sperm and the ovum share in zygote by a ratio of 1:2 ()
2. The virtual image can be received on a screen. ()
3. Earliest life forms began to appear on Earth after the formation of the solar system. ()

B What happens when ... ?

1. The final speed of a moving body is greater than its initial speed.
2. The diameter of the eyeball increases than the normal state.

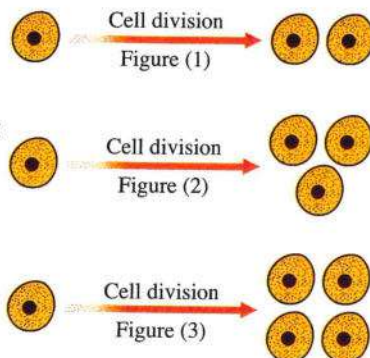
C First : Two cars (A) and (B) are moving at constant speed of 20 m/sec. and 25 m/sec. respectively. They passed together at the same time in front of a building.

Calculate :

1. The relative speed of car (B) with respect to an observer sitting in the car (A), if they are moving in opposite directions.
2. The distance travelled by car (B), if the travelled distance by car (A) is 100 meter in the same time.

Second : Study the opposite figures, then answer :

- a. Which figure has a scientific mistake ?
- b. Mention the figure number that represents the division that :
 1. Reduces the number of chromosomes to half.
 2. Occurs during compensation of damaged cells.
 3. Causes genetic variation between living organisms.



Question 4

A Choose the correct answer :

1. From the scalar physical quantities
 - a. time and force.
 - b. radius and area.
 - c. acceleration and speed.
 - d. mass and displacement.

C What is meant by ... ?

1. Zygote.
2. First law of light reflection.
3. Reproduction by regeneration.
4. Nebula.

Question 2

A Complete the following statements :

1. Galaxy takes distinctive shape according to..... and of group of stars in it.
2. If a car moves at a speed of 80 km/h and it seems to an observer at a speed 30 of km/h, therefore the speed of moving the observer equals km/h and in the direction of car motion.
3. Yeast fungus reproduce by , while paramecium reproduce by

B An object placed in front of convex lens and other object placed in front of concave lens at distance less than focal length. The two lens forming two virtual images :

1. Mention one difference between the two images.
2. Draw the path of light rays in the case of convex lens.

C A. If a mitotic division in a somatic cell contain 20 chromosome happens three times sequentially.

1. What is the number of the cells resulted from these divisions ?
2. What is the number of chromosomes in each resulted cell ?

B. Car moves at a speed of 60 m/sec and when the driver uses the brakes to decrease the speed, it decreases by 2 m/sec^2 , calculate the speed after 10 sec. from using the brakes.

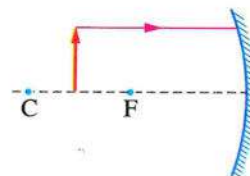
Question 3

A Correct the underlined words :

1. Life forms began to appear on the Earth after about 10000 million years after the Big Bang.
2. Runner covered a distance of 100 meter in a straight track in 10 seconds, then he returned back walking and he took 40 seconds to come back, so the average speed equals 6 m/sec.
3. If the distance between the two centre of curvature of a lens is 16 cm, so its focal length equals 8 cm.

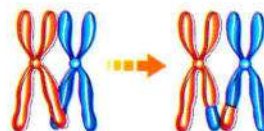
B Draw the opposite figure in your answer paper, then :

1. Complete the path of incident and reflected light rays.
2. Mention the properties of the formed image and its position.



C a. The opposite figure represents a biological phenomenon :

1. What is the name of this phenomenon ?
2. What is the importance of this phenomenon ?



- b. An object was placed in front of plane mirror, the distance between the object and its image was 5 meter and when the mirror moves a certain distance, the distance between the object and its new image becomes 4 meter.
Determine the distance that the mirror moves, and its direction relative to the object.

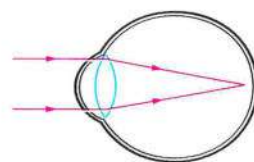
Question 4

A Write the scientific term for each of the following :

1. Asexual reproduction takes place in some plants without needing seeds but through their vegetative organs.
2. The straight line that joins between the two centres of curvature of a lens.
3. Point of connection of the two chromatids of a chromosome.

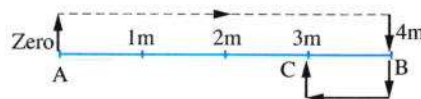
B The opposite figure represent vision defect :

1. What is the type of this defect ? And what are the reasons of this defect ?
2. How this defect can be corrected, and why ?



C a. Compare between the anaphase in mitotic cell division and first meiotic division.
b. A body moves from point (A) to point (B), then changes its direction to point (C).
Calculate :

1. The total distance which the body moves.
2. The displacement done by the body.



20 Qena Governorate

Answer the following questions :

Question 1

A Complete the following :

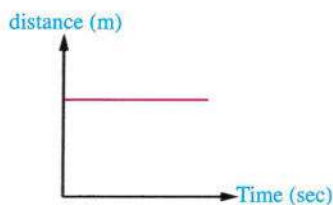
1. The object which moves at negative uniform acceleration, its final speed its initial speed.
2. The convex lens light rays falling on it.
3. In fertilization process, male gamete combines with female gamete to form

B 1. A moving car covered a distance equals 250 metres in 5 seconds, then covered a distance equals 400 metres in 8 seconds. Calculate the speed of car in each case.

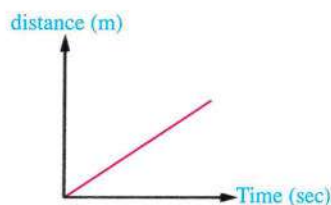
2. **How can you explain :**

No image is formed for an object that is placed at distance equals the focal length of a concave mirror. Show your answer by drawing.

- C** 1. Describe the motion of the body in each of the following graphs :

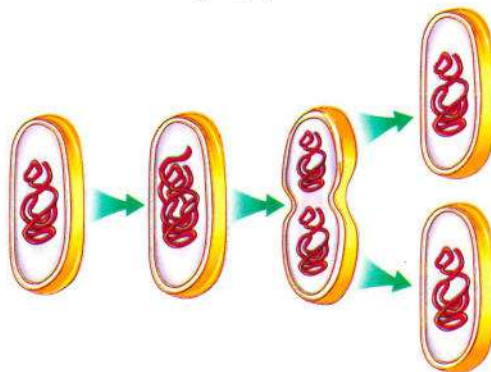


Graph (1)



Graph (2)

2. The opposite figure represents one form of asexual reproduction. Mention the type of this reproduction, and what is the name of this living organism ?



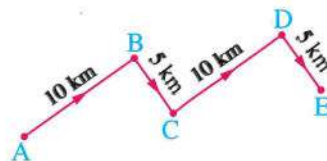
Question 2

- A** Put (✓) or (✗) :

- The dentist uses convex mirror during clinical examination. ()
- The scientist Moulton published a research entitled world order. ()
- At the end of the first prophase in meiotic division, the nuclear membrane disappears. ()

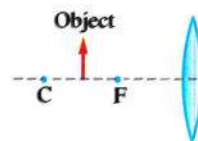
- B** 1. In the opposite figure :

A car moved from point (A) to point (E) in one minute.
Calculate the average speed by which the car moved
in unit m/sec.



2. In the opposite figure :

Draw the path of incident rays from the object on the convex lens to get an image for the object and write the properties of the formed image.



- An object moved 80 m northward from starting point then returned back 20 m southward on the same road.
Calculate its displacement, and when does its displacement equal zero?
- Compare between somatic cells and reproductive cells according to the type of cell division.

Question 3

A Choose the correct answer :

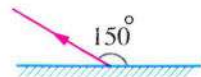
1. The concept of the body movement means
a. change in its position with the change in time.
b. constancy of its position with the change in time.
c. constancy of its speed.
d. constancy of its acceleration.
2. The focal length of a spherical mirror has radius of curvature equals 20 cm, is cm.
a. 5 b. 10 c. 15 d. 40
3. The two gases which produced galaxies and stars with ratio 1 : 3 are
a. helium and nitrogen. b. hydrogen and helium.
c. helium and hydrogen. d. oxygen and nitrogen.

B 1. Compare between :

The three following physical quantities according to their types :
Time, acceleration and force.

2. In the opposite figure :

The angle between the incident light ray and the reflecting surface of the mirror is 150° , calculate angle of incidence and angle of reflection, and what do you conclude from the results ?



- #### C
1. Write the properties of the image formed by the plane mirror. (two properties only)
 2. What is the meant by ... ?
Crossing over phenomenon, and what is its importance?

Question 4

A Write the scientific term for each of the following :

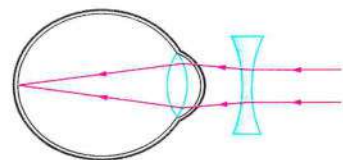
1. A point inside the lens that lies on the principal axis in the mid distance between its two faces.
2. Glowing gaseous sphere revolving around itself, from which the solar system was originated.
3. A galaxy that contains the Sun and the solar system.

B 1. A car starts to move from rest until its speed reaches 50 m/sec in 5 seconds, calculate the acceleration with which the car moves.

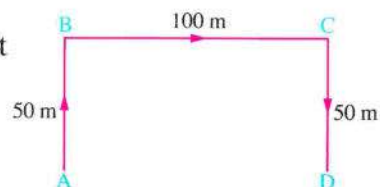
2. The opposite figure represents a vision defect.

What is the type of vision defect ? Mention one of its reasons.

What is the role of the used lens for treatment of this defect ?

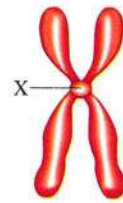


- #### C
1. The opposite figure represents an object moved from point (A) to point (D) passing by points (B) and (C) in 25 seconds. Calculate the velocity of this object.



2. **In the opposite figure :**

What is the name of the part which is indicated by letter (X), and in which phase of mitotic division the part (X) splits lengthwise into two halves?



21 Luxor Governorate

Answer the following questions :

Question 1

A Complete the following sentences :

1. The point of collection of the reflected light rays in the concave mirror is called
2. The male gamete and the female gamete share by ratio 1:1 in the formation of
3. A car moves with a uniform (regular) speed of 12 m/sec for 3 seconds, so the acceleration of motion during this period of time equals

B When do the following cases occur ... ?

1. The angle of incidence of a light ray falls on the reflecting surface of a concave mirror equals zero.
2. The displacement of a moving body equals zero.

C Compare between each of the following :

1. The acceleration by which the object moves and the mass of this object.
(According to the type of the physical quantity)
2. Liver cell in the human and the leave cell in the plant.
(According to the formation of spindle fibers)

Question 2

A Write the Scientific term for each of the following :

1. Many groups of stars have distinctive shape according to the harmony and order of groups of stars in the universe.
2. An optical piece that is used to correct a vision defect, which causes the formation of images in front of the eye retina.
3. The most common reproduction in living organisms.

B What is meant by ... ?

1. The distance covered by an object is changed by 20 meters each 4 seconds.
2. The image formed by a concave lens is virtual.

C Study the following figures, then answer the questions below :

Figure (1) 1. Mention the kind of motion in the part (AB) and (CD)	Figure (2) 1. This phenomenon is called 2. What is its importance ?
--	--

Question 3

A Choose the correct answer :

- The scientist established his theory about the origin of the solar system on the base of star explosion phenomenon.
 - Laplace
 - Moulton
 - Fred Hoyle
 - Chamberlain
- The speed of a moving object is equal to the covered distance when the time is the unit time.
 - half
 - equal
 - double
 - three times
- A convex lens is placed at the mid distance between the object and its real image when the position of the object
 - at the focus.
 - at double the focal length.
 - at greater than double of the focal length.
 - between the focus and double of the focal length.

- B**
- A hollow thin glass sphere and the reflecting surface is its outer surface, and its diameter is 16 cm, when a part of it is cut as a mirror.
 - What is the type of this mirror ?
 - Calculate its focal length.
 - An object moves in a straight line with a speed of 5 m/s to cover 50 m, then it moves in the same direction for 160 m through 20 sec. Calculate the average speed for this object from the beginning of the movement to the end.

C Mention each of the following (show your answer by drawing) :

- The properties of the formed image by a convex lens for an object which is placed at a distance greater than double the focal length.
- The metaphase in the mitotic cell division.

Question 4

A Write the number which indicates the following :

1. The ratio of hydrogen to helium gas in the universe within minutes after the Big Bang.
2. The principal axis of the lens.
3. The time which the Sun takes to complete one rotation around the centre of the galaxy.

B Which of the following is greater and why ?

1. The speed of a moving object relative to the observer at rest,
and the speed of a moving object relative to the observer is moving in the opposite direction.
2. The virtual image of the object in front of the concave lens,
and the virtual image of the object at a distance less than focal length of the convex lens.

C What happens when ... ?

1. A starfish loses one of its arms, while it contains a part of the central disc.
(for the starfish and for his lost arm)
2. The plane takes off in the same direction of the wind.

22 Aswan Governorate

Answer the following questions :

1. Choose the correct answer :

If the angle between the incident light ray and the reflected light ray is 100° , so the angle of reflection equals

- a. 30° b. 50° c. 90° d. 100°

2. Write the scientific term :

Asexual reproduction that occurs by using different plant organs without the need for seeds.

3. Correct the underlined word :

The lens is a transparent medium that reflects the light and it is limited with two spherical surfaces.

4. What is the meaning of ... ?

An object changes its position as the time passes.

5. Mention one example of :

A tool used to determine the speed of a car directly.

6. What is meant by the relative speed ?

7. Compare between :

Animal cell and plant cell

P.O.C	Animal cell	Plant cell
Formation of spindle fibers		

8. **Choose the correct answer :**

The ratio between the number of chromosomes in somatic cell to the number of chromosomes in one of the gametes of the same living organism, equals respectively

- a. 1 : 1 b. 1 : 2 c. 1 : 3 d. 2 : 1

9. **Put (✓) or (✗)**

From the observations which affected Laplace to establish his theory about the evolution of the solar system, is the existence of glowing stars. ()

10. **Correct the underlined word :**

The older stars gather in the edges of the Milky Way galaxy.

11. **Give a reason for the following :**

A light ray which falls perpendicular on the smooth surface reflects on itself.

12. **An object was placed at a distance of (5 cm) from the optical centre of the convex lens, then no image was formed.**

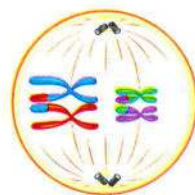
Draw the paths of the rays, and mention the properties of the formed image when the object moves (5 cm) away from the lens.

13. **A car moves from rest and its speed reaches (25) m/sec in (10) seconds.**

What is the value of acceleration with which the car moved ?

14. **From the opposite figure, answer :**

- a. What is the type of the cell division that is figure belongs to ?
b. What is the importance of this cell division ?



15. **Choose the correct answer :**

If the value of the speed of a car = $\left(\frac{d_1 + d_2 + d_3}{t_1 + t_2 + t_3}\right)$, this mean that this speed is

- a. decreasing. b. average. c. increasing. d. uniform.

16. **Write the scientific term :**

A vision defect leads to formation of image behind the retina.

17. **Put (✓) or (✗) :**

The converging lens is thick at its centre and less thickness at its tips. ()

18. **Mention one example of :**

Means of correcting vision defects instead of medical glasses.

19. **Mention the importance of :**

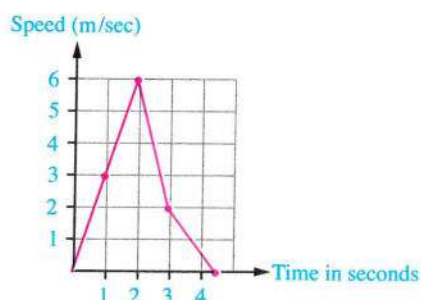
Using a convex mirror at the corners of the narrow roads.

20. **What are the results of ... ?**

No fusion occurs between male gamete and female gamete in the sexual reproduction.

21. **From the opposite graph which show a relation (speed - time) of a car motion study it, then answer :**

1. Determine the type of acceleration at the time period from second (2) to second (4).
2. Determine the type of speed from start car motion to its end motion.



22. **Put (✓) or (✗) :**

The distance is considered a vector physical quantity.

()

23. **Write the scientific term :**

A theory that explains the origin of the universe from a massive explosion since 1500 million years.

24. **Correct the underlined word :**

If the focal length of the spherical mirror is (4) cm, so its radius of curvature equals (16) cm.

25. **Give a reason for the following :**

The motion of metro is considered an example of a motion in one direction.

26. **A moving car covers a distance of (72) km/h.**

calculate its speed in unit m/sec.

27. **What happens if ... ?**

A human skin gets injured or part of it is cut off.

28. **What are the results of ... ?**

Falling of a light ray on a convex lens passing by its optical centre.

23 Red Sea Governorate

Answer the following questions :

Question 1

- A Complete the following sentences :**

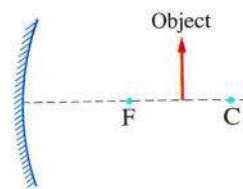
1. The crossing over phenomenon occurs in of the division.
2. Treatment of short-sightedness by using lens, and treatment of long-sightedness by using lens.
3. Velocity and displacement of an object are similar in and different in

- B Write the scientific term :**

1. The value of the speed of a moving object relative to a static or a moving observer.
2. The rebounding (bouncing) of light ray to the same medium when it meets a reflecting surface.

C Answer the following question :

1. Copy the opposite diagram in your answer paper, then complete the path of the rays which form the image of the object and mention the position of the image.



2. If the number of chromosomes in the stem of a plant is 12 chromosomes. What is the number of chromosomes in each of the following :
a. Pollen grain nucleus. b. Zygote cell nucleus.

Question 2

A Cross out the odd words :

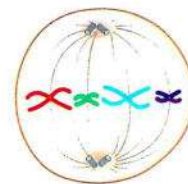
1. Reversed image – Equal size image to the body – Upright image – Real image.
2. The Big Bang theory – The nebular theory – The crossing star theory – The modern theory.
3. A stomach cell – A sperm – A fertilized ovum – A skin cell.

B Give reasons for :

1. Regular speed is difficult to be achieved practically.
2. No image is formed when an object is placed at the focus of a convex lens.

C 1. A car moved at a speed of 20 m/sec when the driver uses the brakes the car stop after 2 sec. Calculate the acceleration and mention its type.

2. Look at the opposite figure, then answer the following questions :
a. What is the name of this phase ?
b. What is the type of this division ?



Question 3

A Choose the correct answer :

1. A student takes a time of 20 second to travel from home to school when he moves at an average speed equals 60 m/sec, which of the following equals the distance between home and school ?
a. 1200 km. b. 12 km. c. 1.2 km. d. 2.1 km.
2. The light ray falling on the lenses does not refract when passing through
a. the real focus. b. the virtual focus. c. centre of curvature. d. the optical centre.
3. The universe consists of fusion of particles of
a. oxygen and helium. b. hydrogen and helium.
c. oxygen and hydrogen. d. helium and nitrogen.

B Mention the importance of :

1. Speedometer. 2. The contact lens.

C Compare between :

1. Concave lens and convex lens (according to type of focus).
2. Sexual reproduction and asexual reproduction.
(according to the number of parental individuals which share in the reproduction).

Question 4

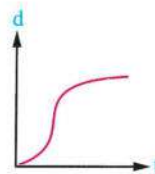
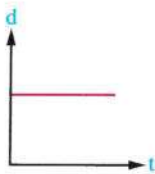
A Correct the underlined words :

1. When an object moves at uniform acceleration, this means that the speed is zero.
2. Attraction force of the Earth controls the orbits of planets around it.
3. The phenomenon of the explosion of stars is due to the sudden chemical reactions.

B What happens in the following cases ... ?

1. An object is put in front of a convex mirror.
2. When an object moves where its starting point is the ending point, according to the displacement.

C 1. Study the following figures, then answer :



- a. The figure represents
 - b. The figure represents
2. Mention the types of asexual reproduction in each of the following :
 - a. Starfish.
 - b. Bread mold fungus.

24 North Sinai Governorate

Answer the following questions :

• Complete the following statements :

1. The image that can be received on a screen.
2. In the Milky Way galaxy, a lot of old stars gather in
3. The theory assumed that the solar system was a glowing gaseous sphere revolving around itself.
4. If the actual speed of a car is 70 Km/h and its relative speed to an observer is 20 km/h. The observer's condition is and the observer's speed equals

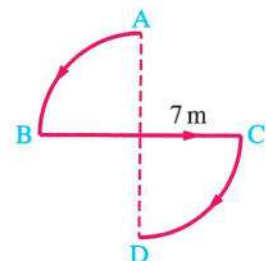
• What is happening with explanation ... ?

5. Place a paper at the focus of convex lens that is directed at sunlight.

• In the opposite figure :

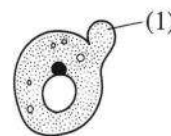
6. A car is moving in a circular path with a radius of 7 meters and a circumference of 44 meters from point (A) to point (D) through points (B) and (C) in 10 seconds.

Prove that the average speed is greater than the car's velocity.



7. The opposite figure is the yeast fungus :

- What is the type of its asexual reproduction ?
- What happens to part (1) during reproduction ?



• Correct the underlined words :

8. Both of average velocity and object's displacement are equal in magnitude.
9. Contact lenses are placed directly on the pupil and can be easily removed.
10. The crossing star is the largest star that can be seen from the Earth.

• Determine the type of the following physical quantities :

11. (mass – force – displacement)

• If the angle between the light ray reflected from the mirror and the reflective surface is 40°

12. Calculate the angle of incidence and show your answer by drawing.

13. Compare between : A concave mirror and a concave lens in terms of :

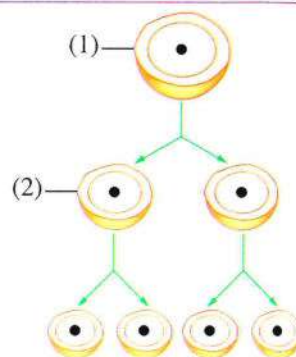
The principal focus type – The effect of each on the parallel incident light rays falling on them.

P.O.C	Concave mirror	concave lens
.....		
.....		

• Study the opposite figure, then answer :

14. What is the important in this type of division ?

- If the number of chromosomes in cell (1) are 16 chromosome, how many chromosomes in cell (2) ?

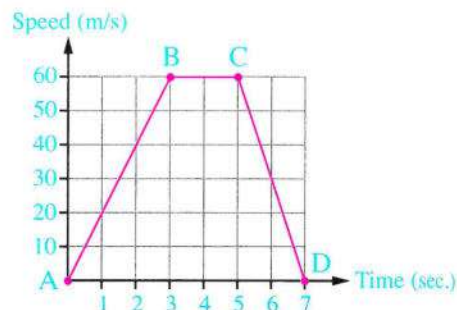


• Write the scientific term for each of the following :

15. The distance between the principal focus and the optical centre of the lens.
16. Wide and extended space that contains all galaxies.
17. Thread like bodies present in cells' nuclei and they represent the genetic material of the living organism.

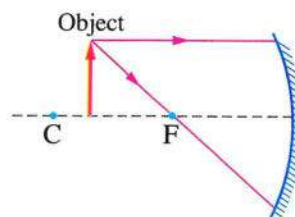
18. Study the opposite figure which represents the movement of an object, then answer :

- Calculate the acceleration at which the body moves in the period (AB).
- What type of acceleration in the period (CD)?



19. **In opposite figure :**

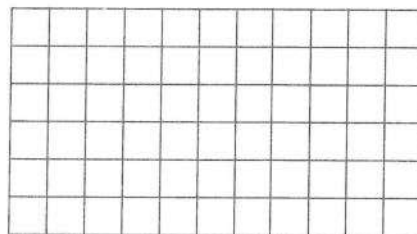
- Complete the path of the rays forming the object image.
- And mention the properties of the formed image.



20. **A body moved in a straight line**, and the distances covered by this body were recorded at different times, as shown in the following table :

D(m)	10	20	30	40	50
T(sec.)	5	10	15	20	25

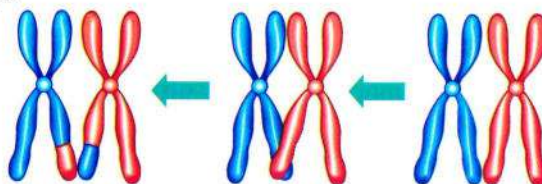
- Draw the graphical relationship (distance - time) for the values shown in the table and describe the motion of an object.



21. **The corresponding figure shows** the steps of one of a biological phenomenon.

What is the name of this phenomenon and what phase does it occurs in ?

What is the result if this phenomenon doesn't happen ?



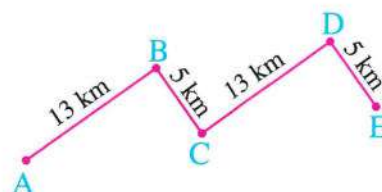
• **Choose the correct answer :**

22. The actual length of the path that a moving object covers from the starting point to the ending point is called the
a. displacement. b. acceleration. c. speed. d. distance.
23. If you put an object in front of plane mirror, the ratio between the length of object's image and the length of the object is one.
a. more than b. equal c. less than d. not equal
24. The parent individual disappears during reproduction of
a. yeast fungus. b. starfish. c. amoeba. d. bread mold fungus.
25. **If an object covers a distance** of 80 m through 2 sec, then it covers 120 m through 2 sec. Did this object move at regular speed ? Why ?
26. **The person can** see near objects clearly and far objects distorted.
What is the name of the vision defect that this person suffers from ?
What are its reasons ?

27. **Mention the importance of each :**

- The centrosomes of an animal cell.
- Interphase.

28. **The opposite figure** represents a body moves from starting point (A) to point (E) passing through the points (B), (C), (D) within 30 minutes. What is the average speed at which the body moves in m/sec.?



1. Choose :

a. irregular speed.

b. regular acceleration.

c. irregular acceleration.

d. regular speed.

2. Choose :

$$\text{a. } r = \frac{f}{2}$$

b. $r = 4f$

$$c. f = \frac{r}{2}$$

d. $f = 2r$

3. Choose :

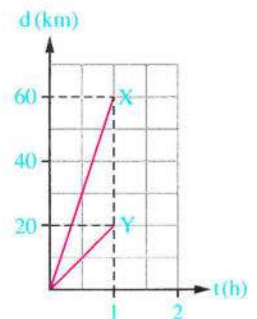
a. three pollen grains. b. four ova.

c. three sperms.

d. four sperms.

4. The opposite graph :

Calculate the ratio between the distance covered by the body (X) to that covered by the body (Y) after 30 minute from starting the motion.



5. Write the scientific reason :

The incident light ray which falls perpendicular on a reflecting surface, reflects on itself.

6. The opposite figure :

Represents a body moves from point (A) to point (B), to cover a distance of 100 meter westward in 10 seconds, then moves 50 meters eastward to point (C) in 5 second. Calculate each of the following : the displacement – the velocity.



7. The opposite figures :

Represent the types of cell division :

Mention the type of cell division in the second figure, and mention one importance of cell division in the first figure.

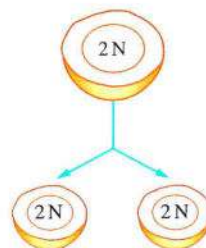


Fig. (1)

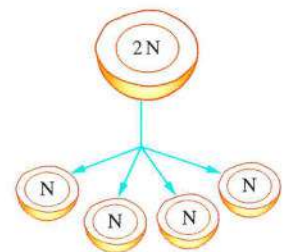
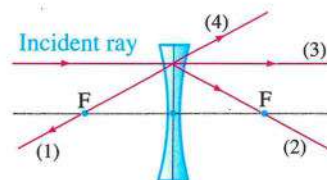


Fig. (2)

8. In the opposite figure choose :

The light ray which complete the correct path of the incident light ray is

- a. (1) and (2) together. b. (2) only.
c. (3) and (4) together. d. (4) only.



9. Choose the odd word or phrase :

Budding – Binary fission – Reproduction by seeds – Vegetative reproduction.

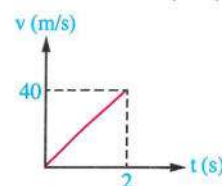
10. Put (✓) or (✗) :

The distances in space measured in kilometer as the distance between stars are very large. ()

11. The opposite graph :

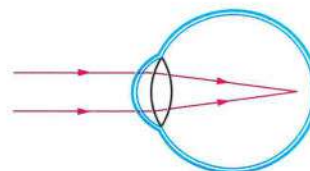
Represents the relation between speed and time.

Calculate the acceleration of the motion and mention its type.



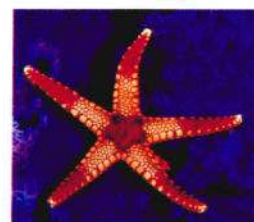
12. The opposite figure :

Represents a vision defect, mention the name of this defect and mention the type of lens used to correct this defect.



13. In the opposite figure :

- Mention the type of reproduction in this living organism.
- What happens for one of its arms when it is cut without a part of the central disc ?



14. A car (A) moves with a speed of 20 m/sec, and another car (B) moves with a speed of 90 Km/h. **Calculate** the relative speed (in m/sec) unit of the car (B) relative to an observer in car (A), if car (B) moves in the same direction of the car (A).

15. Complete the following :

If the distance between an object and its image formed by a plane mirror = 10 meter, so the distance between the object and the mirror = meter.

16. Complete the following :

Within minutes after Big Bang, hydrogen gas was formed by a percentage of %

17. Complete the following :

An object moves in straight line with regular speed to cover 200 meter in 20 second, then it slows its speed to stop completely after 5 second, so its acceleration of motion in the last 5 second equals m/sec.²

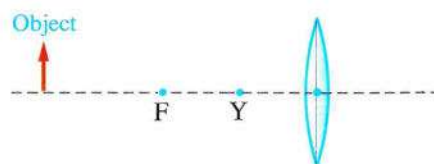
18. Write the scientific reasons :

Force is a vector physical quantity.

19. The opposite figure :

Represents an object is placed at distance 10 cm from a convex lens its focal length = 5 cm.

Mention the properties of the formed image when the object move to the point (Y) knowing that (F) represent the focus.



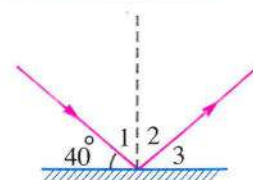
20. Compare in a table between :

Anaphase in mitotic cell division and anaphase I in meiotic cell division according to splitting of centromere.

Anaphase in mitosis division	Anaphase I in meiosis division
 Diagram illustrating Anaphase in mitosis division. Two sister chromatids are shown separating and moving toward opposite poles of the cell. The chromatids are labeled 'A' and 'B'.	 Diagram illustrating Anaphase I in meiosis division. Two homologous chromosomes are shown separating and moving toward opposite poles of the cell. The chromosomes are labeled 'A' and 'B'.

21. The opposite figure :

Represents the reflection of light phenomenon on a plane mirror, mention the number that represents the angle of incidence then calculate the angle of reflection.



22. Choose the odd word or phrase :

Real diminished image – Inverted image – Convex mirror – Concave mirror.

23. Choose the odd word or phrase :

Nebular theory – Crossing star theory – Big Bang theory – Modern theory.

24. Choose the correct answer :

The star in (X) position takes about million years to complete one rotation around the centre of the galaxy (Y).

- a. 220 b. 120
c. 240 d. 300



25. In which of the two figures (1) or (2), the focus can be received on a screen ?

Give a reason ?

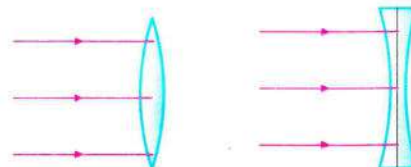


Fig. (1)

Fig. (2)

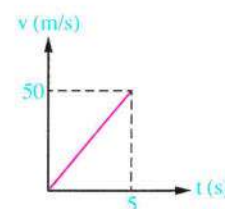
26. The opposite graph :

Shows the relation between speed and time of an object moves with regular acceleration from rest. Calculate its final speed after 20 seconds from starting the motion.

27. Mention one importance of the following :

– Speedometer – Graphs and tables

28. If the number of chromosomes in a male gamete of human equals 23 chromosomes, **calculate** the number of chromosomes in the nucleus of an ovum and the number of chromosomes in a skin cell.



Answer the following questions :

Question 1

A Write the scientific term for each of the following :

1. It is the wide and extended space that contains galaxies.
2. The image that can be received on the screen.
3. A phase in which the chromosomes are arranged at the cell equator during cell division.

B When the following happens ... ?

1. The relative speed of a moving object is equal to its real speed.
2. Reflection of a light ray at an angle of 30° .

C 1. A car moved at a regular speed, covering a distance of 100 meters in a time of 5 seconds, then the driver pressed the brake and it took 5 seconds until it stopped, find the magnitude of the acceleration with which the car moved in each of :

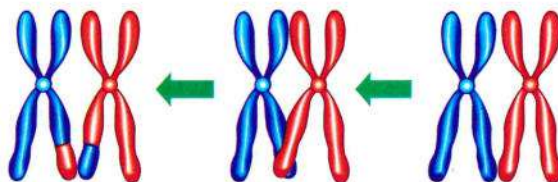
First : During the first 100 meters.

Second : After pressing the brake.

2. The opposite figure represents one of the vital phenomena. State:

First : The name of this phenomenon

Second : The name of the phase in which this phenomenon occurs.



Question 2

A Complete the following statements :

1. The yeast fungus reproduce asexually by
2. The result of multiplying a speed of a moving object by time equals
3. Images of objects are formed in mirrors due to a phenomenon of of light.

B Give reasons for :

1. The regular speed of a car is difficult to achieve in practice.
2. A convex mirror is placed on railway and metro platforms.

C 1. If the number of chromosomes in the stem cell of a plant is 6 pairs of chromosomes, what is the number of chromosomes in each of :

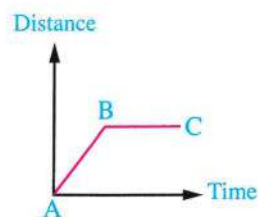
First : The nucleus of a pollen grain.

Second : The nucleus of a zygote.

2. Study the opposite graph and then determine the period in which the object is :

First : In a state of rest.

Second : In a state of movement at a regular speed.



Question 3

A Correct the underlined words :

1. Nine planets revolve around the Sun.
2. The spherical mirror with a diameter of 40 cm has a focal length of 20 cm.
3. The modern theory of the origin of the solar system is attributed to the scientist Laplace.

B 1. In the opposite figure :

First : Draw the refracted light rays to obtain an image for the object.

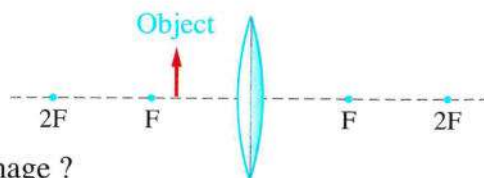
Second : What are the properties of the formed image ?

2. Which of the following physical quantities are scalar and which are vector ?

First : Length

Second: Force

Third : Time



C 1. Complete the missing parts in the following table :

	Displacement (m)	Time (sec)	Velocity (m/sec)
1	120 East	6	
2		8	5 North

2. Explain the origin of the spindle fibers in each of :

First : The animal cell

Second: The plant cell

Question 4

A Choose the correct answer :

1. A car moves with a speed of 50 m/sec, so its speed will be the speed of a car moves with a speed of 90 km/h.
a. quarter b. equal to c. half d. double
2. A person stood in front of a plane mirror at a distance of 3 meters from it, the distance between his image and the mirror is meters.
a. 2 b. 3 c. 4 d. 6
3. The modern discoveries in the sciences of enabled scientists to trace the history of the universe.
a. physics and astronomy b. biology and physics
c. chemistry and biology d. physics and chemistry

B What is meant by ... ?

1. The average speed of a moving object is 90 km/h.
2. The radius of curvature of a concave mirror is 7 cm.

C 1. Compare between :

Asexual and sexual reproduction in terms of : (the genetic traits of the resulted offspring – the type of division on which the reproduction depends).

P . O . C	Asexual reproduction	Sexual reproduction
The genetic traits of the resulted offspring		
The type of division on which the reproduction depends		

2. A student cannot see the blackboard clearly when sitting in the front seat in the classroom due to a defect in his eye vision, so he always sits in the back seat.

First : Mention this defect.

Second: How is this defect corrected ?

27 Matrouh Governorate

Answer the following questions :

Question 1

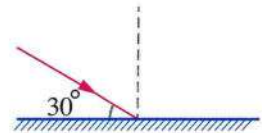
A Choose the correct answer :

1. The source of genetic variation is the reproduction.

- a. budding b. vegetative c. sexual d. asexual

2. A light ray that falls on a plane mirror as in the figure, it reflects where the angle of reflection equals

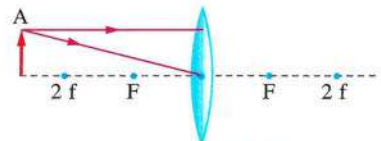
- a. 30° b. 60° c. 90° d. 120°



3. The two factors which can be used to describe the motion of a body are the

- a. speed and time. b. distance and time.
c. area and time. d. displacement and speed.

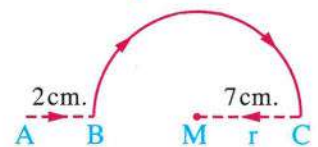
B 1. Draw the figure in your answer paper, then draw the refracted light rays to obtain a real, inverted, and diminished image for the object (A).



2. The opposite figure represents the motion of an object from point (A) to (M) passing by (B and C)

Calculate :

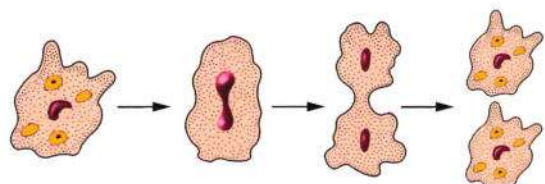
- a. The covered distance. b. The displacement.



C 1. Study the opposite figures, then answer the questions :

What is the type of reproduction and its importance ?

What is the name of this process ?



2. A car moves at a uniform speed 72 km/h., and when the driver uses the brakes the car stops after 20 sec., Calculate the acceleration by which the car moves and mention the type of acceleration.

Question 2

A Put (✓) or (✗) :

1. Meiotic division occurs in somatic cells. ()
2. The solar system is located at the edge of the Milky Way galaxy. ()
3. There is only one principal axis of a lens. ()

B 1. When the following happens ... ?

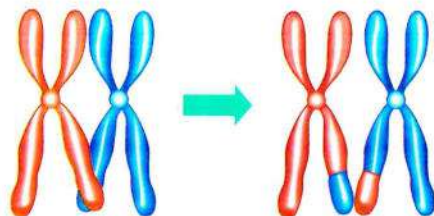
The speed of a moving object relative to an observer equals zero.

2. Show by drawing the path and the directions of the light rays :

When an object is placed in front of a concave mirror at a distance equals to the double of its focal length. [Mention the properties of the formed image]

C 1. The opposite graph :

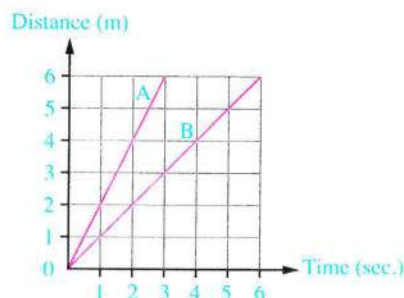
- a. This phenomenon is called, and it occurs in the at division.
- b. It takes place between the two of each tetrad.



2. The opposite graph :

Shows the movement of two bodies (A) : (B)

- a. What is the type of speed of two bodies ?
- b. Calculate the ratio between the speed of body (A) and that of body (B).



Question 3

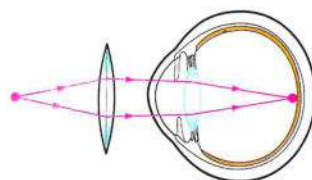
A Choose the odd word in each of the following :

1. Force – Acceleration – Time – Displacement.
2. Moulton – Loplac – Crossing star – Chamberlain.
3. Reversed – Equal to the body – Upright – Thick.

- B 1. A racer ends the race in 2 hour with average speed 25 Km/h. If you know that the racer covers the first 15 Km in an hour. Calculate the speed of racer after the first hour to complete the race in the given time.

2. From the opposite figure :

- a. Mention the type of the vision defect in this eye and its reasons.
- b. Where was the image formed before using the lens ?



C Compare between :

1. Real image and virtual image (according to how it formed).
2. Reproductive cell and gamete (according to the type of division and the number of chromosomes).

Question 4

A Complete the following statements :

1. The scientists believe that the universe emerged from a massive explosion and it is in
2. The lens is thin at its centre and thick at the tips.
3. A theory assumed that the solar system was originally a glowing gaseous sphere revolving around it self.

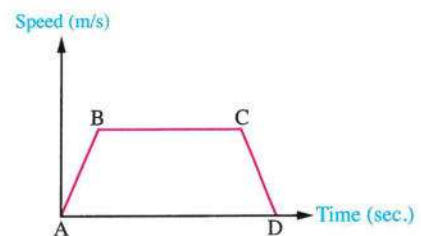
B 1. Calculate the focal length of a concave mirror, whose diameter is 36 cm.

2. Describe the motion of the body which shown in the opposite graph through the three following intervals:

AB.

BC.

CD.

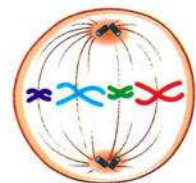


C 1. What is meant by ... ?

- a. Force is a vector physical quantity.
- b. The distance covered by a body equals the amount of displacement happened.

2. From the opposite figure, answer the questions :

- a. What is the type of division and its importance ?
- b. What is the name of this phase ?





Final Examinations

2025

1 Cairo Governorate

1

- (A) 1. concave 2. zygote.
3. the distance.
- (B) 1. This means that the distance covered at a certain direction from the primary position of movement towards its final position equals 10 meter.
2. This means that the distance between the focus of the concave mirror (F) and its pole (P) equals 4 cm.
- (C) 1. Regular speed, the value of acceleration equals zero.
2. Bread mould fungus, the method of reproduction is spore propagation.

2

- (A) 1. b 2. c 3. a
- (B) 1. It reflects on itself, where the angle of incidence equals the angle of reflection equals zero.
2. The spindle fibers will not formed and the cell division isn't completed.
- (C) 1. It works on the variation of genetic traits among the members of the same species, where it contributes in the exchange of genes (that carry genetic traits) between the two homologous chromosome's chromatids, and distributing them randomly in the gametes.
2. $V_1 = 30 \text{ m/sec.}$ $V_2 = 0$
 $t = 10 \text{ sec.}$ $a = ?$
$$a = \frac{V_2 - V_1}{t} = \frac{0 - 30}{10} = -3 \text{ m/sec}^2.$$

3

- (A) 1. convex 2. average
3. helium
- (B) 1. Because it is a virtual image formed behind the plane mirror, where the extensions of the reflected light rays are intersected.
2. To form two identical groups of chromosomes, one at each pole of the cell.
- (C) 1. Force : vector physical quantity.
Mass : scalar physical quantity.
2. Mitosis : somatic cells.
Meiosis : reproductive cells.

4

- (A) 1. The solar system. 2. The optical centre.
3. The nebula.
- (B) 1. Real, inverted and equal in size to the object.
2. This means that it moving with a regular speed equals 20 m/sec.
- (C) 1. When the observer moves with the same speed of the moving object but in opposite direction.
2. - Reproduction by binary fission.
- Bacteria.

2 Giza Governorate

1

- (A) 1. straight 2. 30°
3. reproductive
- (B) 1. This means that the car covers a distance of 40 km each one hour
2. This means that :
- Half the diameter of the sphere where this lens is a part of it equals 7 cm.
- (C) 1. $d = 150 \text{ meter}$ $t = 30 \text{ second}$ $\bar{v} = ?$
$$\bar{v} = \frac{d}{t} = \frac{150}{30} = 5 \text{ m/sec}$$

2. It can be done by using plant's vegetative organs (leaves, roots and stems) without the need of seeds to produce new plants identical to the parent plant.

2

- (A) 1. (✓) 2. (X) 3. (✓)
- (B) 1. A vision defect will occur which is short-sightedness.
2. The object will move with a uniform acceleration.
- (C) 1. Sponge : reproduce by budding.
Paramecium : reproduce by binary fission.
2. The length : is a scalar physical quantity.
The force : is a vector physical quantity.

3

- (A) 1. d 2. c 3. a

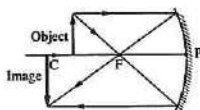
- (B) 1. Because it is identified by magnitude and direction.
2. Because it is a virtual image formed behind the plane mirror, where the extensions of the reflected light rays are intersected.

(C) Fig (1) :

- Crossing over phenomenon.
- It works on the variation of genetic traits among the members of the same species, where it contributes in the exchange of genes (that carry genetic traits) between the two homologous chromosome's chromatids, and distributing them randomly in the gametes.

Fig (2) :

1.



2. Real, inverted and magnified.

4

(A) 1. c 2. a 3. b

- (B) 1. When the object is put at any distance from a convex mirror.
2. When the object covers unequal distances at equal periods of time.
- (C) 1. It is the speed of a moving object relative to a static or a moving observer.
2. It is the ability of animals to compensate their missing parts.

3 Alex. Governorate

1

(A) 1. b 2. c 3. c

- (B) 1. It used to identify the speed of car and planes directly.
2. It used to correct vision defects instead of medical glasses.
- (C) 1. vector - m/sec^2 .
2. binary fission - budding.

2

(A) 1. (X) 2. (✓) 3. (✓)

(B) 1. Force, the rest are scalar physical quantities.

2. Real, the rest are properties of image formed by the plane mirror.

(C) 1. a. Displacement = 80 m in east direction (AD).

b. Velocity = $\frac{\text{displacement}}{\text{time}}$

$$= \frac{80}{30 + 40 + 10} = 1 \text{ m/sec,}$$

in east direction (AD).

2. a. Crossing over phenomenon.

b. It works on the variation of genetic traits among the members of the same species, where it contributes in the exchange of genes (that carry genetic traits) between the two homologous chromosome's chromatids, and distributing them randomly in the gametes.

3

(A) 1. Relative speed. 2. Principal axis.

3. Universe.

(B) 1. The acceleration equals zero.

2. It will reflect on itself, where the angle of incidence equals the angle of reflection equals zero.

(C) 1. Virtual image : It is the image which cannot be received on a screen.

- Real image : It is the image which can be received on a screen.

2. Centromere : It is the point of connection of the two chromatids of chromosomes.

- Centrosome : It forms the spindle fibers during animal cell division.

4

(A) 1. erect 2. 50° 3. helium.

(B) 1. Because the mirrors of the cars in front of the ambulance car, form a laterally inverted image for this word, and thus it appears laterally corrected to the drivers.

2. Because the train moves forward or backward in a straight path or curved path or combination of both.

(C) 1. $V = 90 \times \frac{5}{18} = 25 \text{ m/sec.}$

2. Prophase I of meiotic division.

4 Qalyoubia Governorate

1

(A) 1. d 2. c 3. c

(B) 1. $V_1 = 20 \text{ m/sec.}$ $t_1 = 10 \text{ sec.}$
 $a = -2 \text{ m/sec}^2$ $t_2 = 3 \text{ sec.}$ $V_2 = ?$
 $a = \frac{V_2 - V_1}{t_2}$
 $-2 = \frac{V_2 - 20}{3}$
 $V_2 - 20 = -6$ $V_2 = 14 \text{ m/sec.}$

2. As the object is placed at a distance less than the focal length of the lens, so the object's image is a virtual image formed at the same side of the object.

(C) 1. $BD = \sqrt{(BC)^2 + (CD)^2}$
 $= \sqrt{1^2 + 1^2} = \sqrt{2} \text{ m}$
 Displacement = AB + BC
 $= 1 + \sqrt{2} \text{ m}$ in east direction ($\overrightarrow{AD}$).

2. Anaphase of mitosis.

2

(A) 1. Optical centre. 2. Gravity force.

3. Centromere.

(B) 1. $d_A = 50 \text{ m}$ $V_A = 3 \text{ m/sec.}$ $t_A = ?$
 $d_B = 35 \text{ m}$ $V_B = 2 \text{ m/sec.}$ $t_B = ?$
 $t_A = \frac{d_A}{V_A} = \frac{50}{3} = 16.6 \text{ sec.}$
 $t_B = \frac{d_B}{V_B} = \frac{35}{2} = 17.5 \text{ sec.}$

The player (A) reaches the ball firstly, because he takes shorter time than player (B).

2.

P.O.C	Real image	Virtual image
Receiving on a screen.	Can be received on a screen.	Cannot be received on a screen.
Way of formation	Formed as a result of inter section of the reflected or the refracted light rays	Formed as a result of intersection of the extensions of the reflected or the refracted light rays.
Properties	Usually inverted	Usually erect.

(C) 1. $d_1 = 30 \text{ km}$ $V_1 = 25 \text{ km/h}$ $t_1 = ?$
 $d_2 = 60 \text{ km}$ $V_2 = 75 \text{ km/h}$ $t_2 = ?$
 $t_1 = \frac{d_1}{V_1} = \frac{30}{25} = 1.2 \text{ h}$
 $t_2 = \frac{d_2}{V_2} = \frac{60}{75} = 0.8 \text{ h}$
 $\bar{V} = \frac{d_1 + d_2}{t_1 + t_2} = \frac{30 + 60}{1.2 + 0.8} = \frac{90}{2} = 45 \text{ km/h.}$
 2. - Fig. (A) reproduce by budding.
 - Fig. (B) reproduce by binary fission

3

- (A) 1. When the object moves in straight line in one direction.
 2. When the incident light ray falls perpendicular on a reflecting surface.
 3. After about 5000 million years.
 (B) 1. $V_1 = 6 \text{ m/sec.}$ $V_2 = 0$ $t = 3 \text{ sec}$
 $a = \frac{V_2 - V_1}{t} = \frac{0 - 6}{3} = -2 \text{ m/sec}^2$
 2. Solar ovens.

- (C) 1. To form real, inverted and equal image, the object must be at the centre of curvature.
 $\therefore f = 5 \text{ cm.}$
 $\therefore r = 2 \times f = 2 \times 5 = 10 \text{ cm.}$

The distance that the object moves toward the mirror = $12 - 10 = 2 \text{ cm.}$

2. Because interphase has an important roles before starting cellular division, which are :
 - Occurrence of some important biological processes.
 - Duplicating the genetic material (DNA).

4

- (A) 1. 20 cm. 2. helium.
 3. Pierre Simon Laplace.

(B) 1.

	Distance (m)	Time (sec)	Speed (m/sec)
(x)		1 sec	
(y)	50 m		100 m/sec

2. Angle of incidence = Angle of reflection.
 (C) 1. The relative speed =

The actual speed - The observer speed.

$$80 = \text{The actual speed} - 30$$

The actual speed = $80 + 30 = 110$ km/h.

2. The cell loses its ability to divide by mitosis.

5 Menofia Governorate

1

- (A) 1. c 2. d 3. a

- (B) 1. The speed of the object is not equal its velocity, because the covered distances ($AB + BC + CD$) not equal displacement (AD), where :

$$\text{The speed} = \frac{AB + BC + CD}{t}$$

$$\text{The velocity} = \frac{AD}{t}$$

2. It is any straight line that passes by the centre of curvature of the mirror and any point on its reflecting surface except the pole of the mirror.

- (C) 1. Because the speed of the car changes according to the conditions of the road.

2. The number of cells produced in telophase II = 4 gametes.

- Each gamete has half genetic material of the ovary cell = $\frac{1}{2} \times 2N = N$.

- The total number of chromosomes of the resulting cells in telophase II = $4 \times N = 4N$

2

- (A) 1. 5 cm. 2. crossing star theory.

3. (7) divisions

- (B) 1. $V_1 = 10$ m/sec. $V_2 = 20$ m/sec.

$$a = 2 \text{ m/sec}^2. \quad t = ?$$

$$a = \frac{V_2 + V_1}{t}$$

$$2 = \frac{20 - 10}{t}$$

$$t = \frac{10}{2} = 5 \text{ sec.}$$

2. The relative speed =

The real speed - The observer speed

$$= 80 - 50$$

$$= 30 \text{ km/h.}$$

- (C) 1. It causes the variation of genetic traits among the members of the same species.

2. The focal length for the eye lens increases, the convexity of the eye lens surface decreases, the person affected with long-sightedness.

3

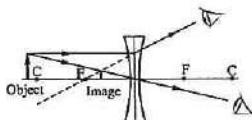
- (A) 1. (X) 2. (X) 3. (✓)

- (B) 1. Irregular speed

$$\begin{aligned} \bar{V} &= \frac{d_1 + d_2 + d_3}{t_1 + t_2 + t_3} \\ &= \frac{20 + 45 + 55}{1 + 2 + 3} = \frac{120}{6} = 20 \text{ m/sec.} \end{aligned}$$

2. Virtual, erect and diminished.

- (C) 1.



- 2.

General structure of chromosome	Chemical structure of chromosome
Each chromosome consists of :	Each chromatid consists of :
- Two connected threads, each thread is called chromatid.	- A nucleic acid called DNA which carries the genes that carry the genetic traits of the living organism.
- The two chromatids are connected at a point known as centromere.	- protein.

4

- (A) 1. d 2. a 3. b

- (B) 1. When the body moves with regular speed.

2. The body put at the centre of curvature of the lens face.

- radius of mirror curvature = 10 cm.

- focal length = $\frac{1}{2}r = \frac{1}{2} \times 10 = 5$ cm

- (C) 1. $V = 300000$ km/sec. $t = 3$ sec. $d = ?$

$$d = V \times t = 300000 \times 3 = 900000 \text{ km}$$

2. Euglena reproduce by binary fission.

- Hydra reproduce by budding

6 Dakahla Governorate

1

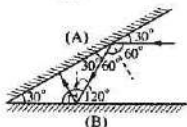
(A)

The odd word	The relation between the rest words
1. Solar oven	Uses of lenses.
2. Car its weight 5000 N	Scalar physical quantities.
Nervous cells	Somatic cells divided by mitosis.

(B) 1. a. Mitotic division.

b. Two cells, each one contains the same number of chromosomes that present in the parent somatic cell.

2.



Angle of reflection on the mirror (B) =

$$120^\circ - 90^\circ = 30^\circ$$

(C) 1. (1 : 1)

2. 16 meter.

3. (8 + 4)

4. -3 m/sec^2 .

2

(A) 1. c

2. d

3. c

(B) 1. Because the mirrors of the cars in front of the ambulance car, form a laterally inverted image for this word, and thus it appears laterally corrected to the drivers.

2. Because the vegetative reproduction occurs through mitotic division in which the new offspring obtains a complete copy of the parent genetic material.

(C) 1. Average speed = $\frac{\text{total distances}}{\text{total periods of time}}$

$$= \frac{4 + 12 + 15 + 4 + 5}{8}$$

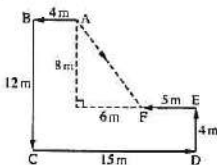
$$= \frac{40}{8} = 5 \text{ m/sec.}$$

2. Displacement

$$= \sqrt{6^2 + 8^2}$$

$$= \sqrt{100}$$

= 10 m. in the southern east direction (AF direction)



$$\text{Average velocity} = \frac{\text{displacement}}{\text{total time}}$$

$$= \frac{10}{8} = 1.25 \text{ m/sec.}$$

in the southern east direction (AF direction)

3

(A) 1. Short-sightedness.

2. Sporangium.

3. Expansion of the universe.

(B) 1. Duplicating the genetic material (DNA).

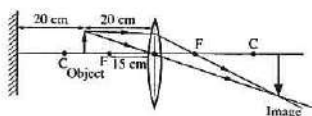
2. Calculation of the time of the trip and the amount of the fuel consumed.

3. Formation of the spindle fibers.

(C) 1. a. An object at rest.

b. An object moves by a negative uniform acceleration.

2.



The properties of the formed image:

Real - inverted - magnified.

4

(A) 1. budding - binary fission.

2. $45^\circ - 45^\circ$

3. 60 - same

(B) 1.

P.O.C	Laplace theory	Crossing star theory
Origin of the solar system	Nebula	The Sun

2.

Real focus	Virtual focus
- Formed when reflected or refracted light rays are intersected. - Produced in front of the concave mirror. - Produced in convex lens.	- Formed when the extensions of reflected or refracted light rays are intersected. - Produced behind the convex mirror. - Produced in concave lens.

(C) 1. $d = 60 \text{ m}$, $t = 12 \text{ sec}$, $V = ?$

$$V = \frac{d}{t} = \frac{60}{12} = 5 \text{ m/sec.}$$

2. $V_1 = 5 \text{ m/sec}$, $a = \frac{20}{t}$, $V_2 = ?$

$$a = \frac{V_2 - V_1}{t}$$

$$\frac{20}{t} = \frac{V_2 - 5}{t}$$

$$V_2 = 20 + 5 = 25 \text{ m/sec.}$$

7 Sharkia Governorate

1

(A) 1. 0°

2. physics and astronomy. 3. $\frac{2}{\pi}$ (or $\frac{7}{11}$)

(B) 1. Because acceleration has magnitude and direction, while mass has magnitude only and has no direction.

2. To form virtual, erect and diminished image, to monitor cars movement and to avoid accident.

(C) 1. $V_A = \frac{t}{t} = \frac{1}{2t} = \frac{1}{2} \text{ m/sec.}$

$$V_B = \frac{2t}{t} = 2 \text{ m/sec.}$$

$$\frac{V_B}{V_A} = \frac{2}{\frac{1}{2}} = 4$$

2. Second meiotic division aims to increase the number-of the produced cells from first meiotic division.

- The name of the resulting cell is gamete.

2

(A) 1. Average speed. 2. Binary fission.

3. Reflected light ray.

(B) 1. Because the relative speed equals the difference between the real speed and the observer's speed equals zero.

2.

	Convex lens	Concave lens
- Definition	Transparent optical piece which thick at its centre and less thickness at the tips	Transparent optical piece which thin at its centre and more thickness at the tips.
- Type of the principal focus.	Real focus, where the lens collects the light rays falling on it.	Virtual focus, where the lens separates the light rays falling on it
- Type of the formed images	Real or virtual.	usually virtual.

(C) 1. $V_1 = 3.6 \text{ km/h}$, $V_2 = 1.3 \text{ m/sec}$,
 $t = 6 \text{ sec}$, $a = ?$

$$V_1 = 3.6 \times \frac{5}{18} = 1 \text{ m/sec.}$$

$$a = \frac{V_2 - V_1}{t} = \frac{1.3 - 1}{6} = 0.05 \text{ m/sec}^2.$$

$$V_2 = 1 \text{ m/sec.}, a = 0.05 \text{ m/sec}^2.$$

$$t = 5 \text{ sec.}, V_1 = ?$$

$$a = \frac{V_2 - V_1}{t}$$

$$0.05 = \frac{1 - V_1}{5}$$

$$V_1 = 1 - 0.25 = 0.75 \text{ m/sec.}$$

2. A large number of spores are released, and when spores fall on a suitable environment (wet bread) each spore grows by mitotic division to give a new fungus identical to the parent.

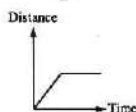
3

(A) 1. 15 2. concave 3. gaseous small

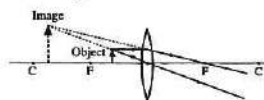
(B) 1. The object at the centre of concave mirror curvature.

$$\text{The focal length} = \frac{8}{2} = 4 \text{ cm.}$$

2.



(C) 1. The object is placed at a distance smaller than the focal length.



The properties of the formed image :
virtual, erect and magnified.

2. a. Anaphase I of first meiotic division.
b. 23 chromosomes.

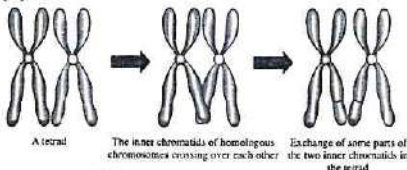
4

(A) 1. d 2. a 3. b

(B) 1. a. 5 cm.
b. 20 cm.
c. 40°

2. The speed of the moving body decreases to quarter.

(C) 1.



$$2. V_1 = \frac{4800}{120} = 40 \text{ m/sec.}$$

$$a = \frac{-2}{4} = -0.5 \text{ m/sec}^2$$

$$t = \frac{V_2 - V_1}{a} = \frac{0 - 40}{-0.5} = 80 \text{ sec.}$$

8

Gharbia Governorate

1

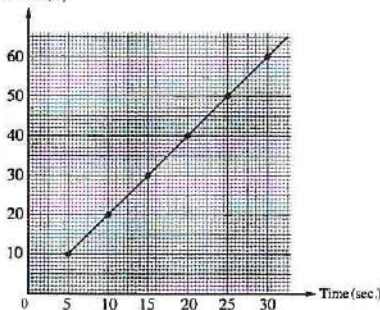
- (A) 1. irregular
3. anaphase

2. right

- (B) 1. a. Object is at rest.
b. Object moves with regular speed.
c. Object moves with regular speed (acceleration equals zero).
2. The position of the object at the focus.
- Because the refracted rays from the lens don't meet and pass through a parallel way.

$$(C) 1. V = \frac{10}{5} = \frac{20}{10} = \frac{30}{15} = \frac{40}{20} = \frac{50}{25} = \frac{60}{30} = 2 \text{ m/sec.}$$

Distance (m)



2. - (1) Sporangium, (2) Spores.
- Each spore grows by mitotic division to give a new fungus identical to the parent.

2

- (A) 1. Secondary axis.
2. Crossing star theory.
3. 43 days.

- (B) 1. The relative speed = real speed + observer's speed = $60 + 90 = 150 \text{ km/h}$

2. The name of the disease is cataract.

The doctor make a surgery to exchange the decayed eye lens with a transparent plastic lens transplanted permanently in the eye.

$$(C) 1. V_1 = 6 \text{ m/sec.} \quad V_2 = 0$$

$$t = 12 \text{ sec.} \quad a = ?$$

$$a = \frac{V_2 - V_1}{t} = \frac{0 - 6}{12} = -0.5 \text{ m/sec}^2$$

- Negative uniform acceleration.

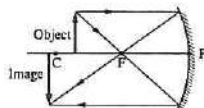
2. Reproduction by budding.
Asexual reproduction.

3

- (A) 1. (X) 2. (✓) 3. (X)

- (B) 1. If the final speed is more than the initial speed, then the object moves with positive acceleration.
- If the final speed is less than the initial speed, then the object moves with negative acceleration.
2. long-sightedness
The far objects can be seen clearly and the near objects seem distorted.

(C) 1.



The properties of the formed image :
Real, inverted and magnified.

2. General structure :

Each chromosome consists of :

- Two connected threads, each thread is called called chromatid.
- The two chromatids are connected at a point known as centromere.

Chemical structure :

Each chromosome consists of :

- A nucleic acid called DNA which carries the genes that carry the genetic traits of the living organism.
- Protein.

4

- (A) 1. b 2. d 3. a

- (B) 1. The distance traveled by the car is greater than its displacement.

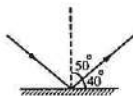
$$\text{Distance} = 2 + 5 + 1 + 3 + 1 = 12 \text{ km}$$

$$\text{Displacement} = 2 \text{ km in east direction}$$

(AF direction)

$$2. \text{ Angle of reflection} = 90^\circ - 40^\circ = 50^\circ$$

$$\text{Angle of incidence} = \text{angle of reflection} = 50^\circ$$



- (C) 1. Scalar physical quantity : it is the physical quantity that has magnitude only and has no direction.

Vector physical quantity : it is the physical quantity that has magnitude and direction.

$$2. \text{ Organisms that reproduce by regeneration} = 35 \text{ starfish} \times 5 \text{ arms} = 175 \text{ starfish.}$$

– Organisms that compensate their missing arms by regeneration = 15 starfish.

– The total number of the resulting complete organisms = $175 + 15 = 190$ starfish.

9 Damietta Governorate

1

- (A) 1. c 2. a 3. b

- (B) 1. Because concave mirror collected the sun rays and directed them towards the sails of ships (which represents the focus of the mirror) to generate extreme heat and burning of these sails.

2. Because the person's speed decreases as he runs then walks.

$$(C) 1. \text{ Circumference of the circle} = 2\pi r$$

$$= 2 \times \frac{22}{7} \times 7 = 44 \text{ cm} = 0.44 \text{ m.}$$

$$\text{Number of cycles} = \frac{\text{Distance covered by the object}}{\text{Circumference of the circle}} = \frac{66}{0.44} = 150 \text{ cycle.}$$

2. – Prophase in the animal skin cell :

A network of filamentous fibers called spindle fibers is formed at the centrosomes extending between the two poles of the cell.

– Prophase in the plant stem cell :

The spindle fibers formed from condensing the cytoplasm at the two poles of the cell, because in plant cell there is no centrosomes.

2

$$(A) 1. (4 : 1)$$

2. stars explosion phenomenon.

$$3. (4 : 4)$$

$$(B) 1. \text{ Distance} = 10 + 30 = 40 \text{ m.}$$

Displacement = 20 m. downward direction.

2. Greater than one, because the plane mirror forms equal size image to the object, while the concave lens forms diminished size image to the object.

(C) 1. Speed will equal velocity in magnitude.

2. The donor person will not be affected with any harm, because his liver is completed due to the occurrence of many mitotic cell divisions.

3

(A) 1. Fred Hoyle.

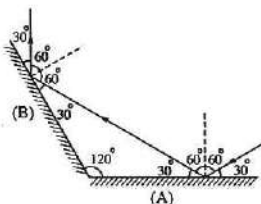
2. no image is formed.

3. 110 second (Because the total distance equals 1000 m. of tunnel plus 100 m. of train)

(B) 1. When the person stands at any distance in front of a convex mirror.

2. When the car moves with speed equals 40 km/h in the same direction of the observer, or when the car moves with speed equals 20 km/h in the opposite direction to the observer.

(C) 1.



The angle of reflection on mirror (A) = 60°

The angle of reflection on mirror (B) = 60°

2. a. Anaphase.

b. Structure (1) : Connect the centromere of chromosome to the centrosome, and during anaphase it begins to shrink so two identical groups of chromosomes are formed.

Structure (2) : Formation of a network of filamentous fibers called spindle fibers.

4

(A) 1. Distance = $3 \times 9.46 \times 10^{12} = 28.38 \times 10^{12}$ km.

2. Distance = $\frac{10}{2} = 5$ m.

3. Number of cycles = $\frac{5000 \times 10^6}{220 \times 10^6} = 22.72$ cycle.

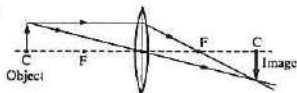
(B) 1. $V_1 = X$ $V_2 = 0$ $t = 20$ sec. $a = -2$ m/sec²

$$a = \frac{V_2 - V_1}{t} = -2 = \frac{0 - X}{20}$$

$$0 - X = -40$$

$$X = 40 \text{ m/sec.}$$

2.



The properties of the formed image :

Real, inverted and equal to the object.

- (C) 1. The similarities : Both yeast fungus and hydra reproduce by budding.

The differences : Yeast fungus is a unicellular organism, while hydra is a multicellular organism.

2. Relative speed : It is the speed of a moving object relative to a static or a moving observer.

Average speed : It is the total distance covered by the moving object divided by the total time taken to cover this distance.

10 Kafr El-Sheikh Governorate

1

- (A) 1. (✓) 2. (✓) 3. (X)

- (B) 1. Due to continuous separation between galaxies in space as a result of their regular movement.

2. In order to :

- Predict the relation between certain physical quantities.
- Understand practical results.
- Describe the physical phenomena in an easier way.

- (C) 1. Principal axis : It is the straight line that passes by the pole of the mirror (P) and its centre of curvature (C).

– Secondary axis : It is any straight line that passes by the centre of curvature of the mirror and any point on its reflecting surface except the pole of the mirror.

2. In human : Meiotic cell division of reproductive cells in testes and ovaries.

– In flowering plants : Meiotic cell division of reproductive cells in anthers and ovaries.

2

- (A) 1. c 2. a 3. b

- (B) 1. When it falls perpendicular on the reflecting surface of a plane mirror.

2. When it passing through the centre of curvature of the concave mirror.

- (C) 1. True concept, because the velocity is a vector physical quantity that has magnitude and direction.

2. First : Relative speed = real speed = 80 km/h.

Second : Relative speed = real speed - observer's speed = $120 - 80 = 40$ km/h.

3

- (A) 1. displacement 2. lens

3. solar system.

- (B) 1. When the arm contains a part of the central disc.

2. – When spores become mature , the sporangium ruptures and spores are released.

– When spores fall on a suitable environment it will grow forming new mushrooms.

- (C) 1. It works on the variation of genetic traits among the members of the same species, where it contributes in the exchange of genes (that carry genetic traits) between the two homologous chromosome's chromatids, and distributing them randomly in the gametes.

2. $V_1 = 0$ $V_2 = 12$ m/sec $t = 4$ sec. $a = ?$

$$a = \frac{V_2 - V_1}{t} = \frac{12 - 0}{4} = 3 \text{ m/sec}^2$$

(positive uniform acceleration)

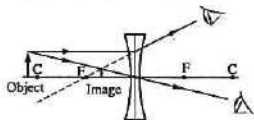
4

- (A) 1. of normal convexity. 2. crossing star
3. interphase

- (B) 1. The displacement will equal zero.
 2. – The Sun escaped from the gravity of the crossing star and a gaseous line was formed of a great length from the Sun until the last planets (which will be formed later).

- (C) 1. Our galaxy has a distinctive shape according to the harmony and order of the groups of stars in it.
 – Our galaxy is a spiral galaxy, and appears in the sky at night as a splashing milk or spreading straw.
 – Our solar system locates in one of the spiral arms on the edge of the galaxy.

2.

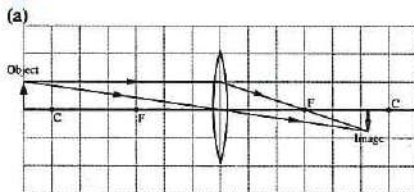


- The properties of the formed image :
 Virtual, erect and diminished.

11 Behira Governorate

1 (X)

2

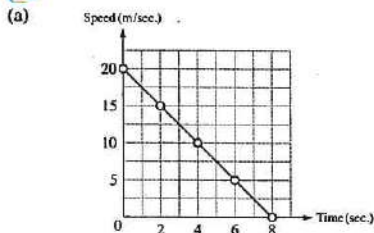


- (b) The properties of the formed image :
 Real, inverted and diminished.

3

$$\bar{V} = \frac{d_1 + d_2}{t_1 + t_2} = \frac{120 + 60}{2 + 1} = 60 \text{ km/h.}$$

4



- (b) Negative uniform acceleration.

5 Principal focus of the lens.

6 c

7

$$a = 6 \text{ m/sec}^2 \quad V_2 = 50 \text{ m/sec.} \quad t = 5 \text{ sec.} \quad V_1 = ?$$

$$a = \frac{V_2 - V_1}{t}$$

$$6 = \frac{50 - V_1}{5}$$

$$30 = 50 - V_1$$

$$V_1 = 20 \text{ m/sec.}$$

8 Vegetative reproduction.

9 c

10

$$d = 200 \text{ km}$$

$$t = \frac{120}{60} = 2 \text{ h.}$$

$$V = \frac{d}{t} = \frac{200}{2} = 100 \text{ km/h.}$$

11

(A) Long-sightedness.

(B) By using convex lens which collects the rays falling on the eye, so the image of the object is formed exactly on the retina.

12

(A) Crossing over phenomenon works on the variation of genetic traits among the members of the same species, where it contributes in the exchange of genes (that carry genetic traits) between the two homologous chromosome's chromatids, and distributing them randomly in the gametes.

(B) First meiotic cell division.

13

(A) Relative speed = real speed = 100 km/h.

(B) Relative speed = real speed – observer's speed
 $= 100 - 80$
 $= 20 \text{ km/h.}$

14

(A) decreases.

(B) increases.

(C) increases.

15

(A) Anaphase I.

(B) The spindle fibers begin to shrink, so every two homologous chromosomes move away from each other.

- Each one of the two homologous chromosomes (each chromosome contains two chromatids) migrates towards one of the cell's poles.
- Therefore, two groups of chromosomes are formed at the cell's poles.

16

a spiral shape.

17

(A) Total distance = $10 + 10 = 20$ m.(B) $\bar{V} = \frac{d}{t} = \frac{10}{5} = 2$ m/sec. in a certain direction.

18

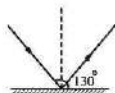
The principal axis of the mirror.

19 b

20 (X)

21

(A)

(B) The angle of incidence = $130 - 90 = 40^\circ$ The angle of reflection = the angle of incidence = 40° $\therefore$ The angle between the incident and reflected light rays = $40 + 40 = 80^\circ$

22 zero

23

(A) Step (1) : the genetic material is doubled.

Step (2) : the genetic material distributes equally into two cells.

Step (3) : Two identical cells are produced, each is identical to the parent cell.

(B) (2N) chromosomes in each one of the produced cells.

24

The properties of the formed image in both cases are the same, which are : Virtual, erect and diminished.

25

Concave mirror, it collects the parallel light rays of the Sun that fall on its surface in one point which is the principal focus, leading to high elevation in temperature.

26 (X)

27

P.O.C	Somatic cells	Reproductive cells
Type of division	Mitosis	Meiosis
Importance	– Growth of living organisms. – Compensation of the damaged cells.	– Production of male and female gametes to complete the sexual reproduction

28

Hubble telescope.

12 Ismailia Governorate

1

(A) 1. c 2. d 3. b

- (B) 1. When the body returns to its primary position of movement, where the final position of movement is the same of its primary position.
2. When the body is placed at the focus of the concave mirror.

(C) 1.

P.O.C	Animal cell	Plant cell
Formation of spindle fibers	The spindle fibers are formed by the centrosome.	The spindle fibers are formed by condensing the cytoplasm at two poles of the cell (Because in plant cell there is no centrosomes).

2.

P.O.C	Mass	Force
Type of physical quantity	Scalar physical quantity.	Vector physical quantity

2

(A) 1. Reproduction by sporogony.

2. Nebular theory.

3. Optical centre.

(B) 1. Short-sightedness.

Reasons : - Increase in the eyeball diameter.

- Increase in the convexity of the eye lens surface.

Correction : Concave lens.

2. -Fig. (A) : An object at rest.

- Fig. (B) : An object moves with regular speed (zero acceleration).

- Fig. (C) : An object moves with positive uniform acceleration.

(C) 1. Because the speed of the car changes according to the conditions of the road.

2. Because zygote produced from combination of a male gamete (N) and a female gamete (N).

3

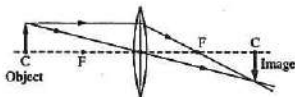
(A) 1. plane 2. Milky way 3. four times

(B) 1. Distance = $10 + 30 + 40 + 30 = 110$ m.

Displacement = 30 m, in south direction.

Difference = $110 - 30 = 80$ m.- Velocity = $\frac{d}{t} = \frac{30}{6} = 5$ m/sec. in south direction.

2.

- The properties of the formed image :
Real, inverted and equal to the object.

(C) 1. - Growth of living organisms.

- Compensation of the damaged cells.

- Completing asexual reproduction process.

2. In the right and left sides of the car driver.

- At shopping centers.

- On the corners of narrow roads.

- At cars park.

- At the platform of the metro and railway stations.

4

(A) 1. cornea.

2. Earth

3. 75 % , 25 %

(B) 1. It is the change of an object speed in one second.

2. It is a disease that causes a difficulty of vision as a result of the darkness of the eye lens.

(C) 1. Time of the trip and amount of consumed fuel will increase.

2. Occurrence of crossing over phenomenon, where some parts of the two inner chromatids in the tetrad are exchanged, so exchange of genes and distributing them randomly in the gametes that works on the variation of genetic traits among the members of the same species.

13**Suez Governorate****1**

(A) 1. b

2. c

3. a

(B) 1. This means that the average speed of the car equals 110 km/h.

2. This means that the distance between the principal focus and the pole of the mirror equals 15 cm.

(C) 1. sporangium - asexual reproduction.

2. 5 m/sec^2 - positive uniform acceleration.**2**

(A) 1. prophase.

2. the solar system.

3. the focus.

(B) 1. Because the speed of the car changes according to the condition of the road.

2. Because the refracted light rays and also their extensions are parallel, so they don't intersect.

(C) 1. 23 - 46.

2. 6 - 3

3

(A) 1. d

2. c

3. b

(B) 1. Concave lens.

2. Plane mirror.

(C) 1. anaphase - mitosis.

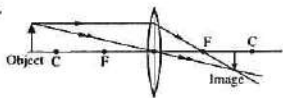
2. crossing over phenomenon

– It works on the variation of genetic traits among the members of the same species, where it contributes in the exchange of genes (that carry genetic traits) between the two homologous chromosome's chromatids, and distributing them randomly in the gametes.

1

- (A) 1. The Milky Way galaxy.
2. Velocity.
3. Asexual reproduction.

- (B) 1. optical centre – virtual.
2.



– The properties of the formed image :
Real, inverted and diminished.

(C) 1. $\bar{V} = \frac{d_1 + d_2}{t_1 + t_2} = \frac{100 + 100}{10 + 80} = 2.22 \text{ m/sec.}$

2.

P.O.C	Concave mirror	Convex mirror
– Centre of curvature	In front of the reflecting surface	Behind the reflecting surface.
– Reflecting surface	A part of the inner surface of the sphere which the mirror is a part of it.	A part of the outer surface of the sphere which the mirror is a part of it.

14 Port Said Governorate

1

- (A) 1. spiral 2. cornea 3. nuclear

- (B) 1. When the plane takes off in the same direction of wind, the value of its velocity increases, so the time of the trip decreases and therefore the amount of the fuel consumed decreases.

– When the plane takes off in the opposite direction of wind, the value of its velocity decreases, so the time of the trip increases and therefore the amount of the fuel consumed increases.

2. Focal length = $\frac{40}{4} = 10 \text{ cm.}$

– Convex mirror.

- (C) 1. In Fig. (1) reproduction by budding.
In Fig. (2) reproduction by sporogony.

$$2. \bar{V} = \frac{d_1 + d_2}{t_1 + t_2} = \frac{45 + 60}{2 + 4} = \frac{105}{6} = 17.5 \text{ km/h.}$$

2

- (A) 1. Concave lens. 2. Nebula. 3. Velocity.

- (B) 1. Displacement ($\bar{d}$) = $20 - 8 = 12 \text{ m.}$ Westward direction.

Distance : (d) = $20 + 8 = 28 \text{ m.}$

Difference : $\bar{d} - d = 28 - 12 = 16 \text{ m.}$

2. In pocket torch, to reflect the light of the lamp.
– In front lights of cars, to reflect the light of the lamp.
– In solar ovens, to heat food and water.

- (C) 1. In the nucleus of a liver cell : 46 chromosomes.

In the nucleus of a zygote : 46 chromosomes.

2. Figure (1) : The light ray will be reflected parallel to the principal axis.

Figure (2) : The light ray will be reflected passing through the focus.

1

- (A) 1. Fred Hoyle

2. 20°

3. telophase

- (B) 1. When the observer moves in the opposite direction at the same speed of the moving object.

2. Because the reflected light rays and also their extensions are parallel, so they don't intersect.

- (C) 1. $d = 200 \text{ km}$ $V = 40 \text{ km/h.}$ $t = ?$

$t = \frac{d}{V} = \frac{200}{40} = 5 \text{ h.}$

Time of arrival = $6 + 5 = 11 \text{ O'clock.}$

2. The genetic material will not be duplicated and each cell from resulting cells doesn't obtain a complete copy of genetic material.

4

- (A) 1. c 2. d 3. c

- (B) 1. Real, inverted and magnified.

2. $V_1 = 50 \text{ m/sec.}$ $a = -2 \text{ m/sec}^2$ $t = 12 \text{ sec.}$ V_2

$a = \frac{V_2 - V_1}{t}$

$-2 = \frac{V_2 - 50}{12}$

$-24 = V_2 - 50$

$V_2 = 26 \text{ m/sec.}$

(C) 1. Crossing over phenomenon.

- It works on the variation of genetic traits among the members of the same species, where it contributes in the exchange of genes (that carry genetic traits) between the two homologous chromosome's chromatids, and distributing them randomly in the gametes.

2. Figure (1) : Speed (m/sec.)

Figure (2) : Distance (m)

15 Fayoum Governorate

1

(A) 1. c 2. b 3. a

(B) 1. The angle of incidence = $90^\circ - 30^\circ = 60^\circ$

The angle between the incident light ray and

The reflected light ray = $60^\circ + 60^\circ = 120^\circ$

2. The displacement when it makes half circle = 7 km.

The displacement when it makes complete circle = zero

(C) 1.

P.O.C	Starfish	Bread mold fungus
Condition for reproduction	When the missing arm contains a part of the central disc.	When the sporangium ruptures and spores fall on a suitable environment (wet bread).

2.

P.O.C	uniform speed	Non-uniform speed
Definition	It is the speed by which the object moves when it covers equal distances at equal periods of time.	It is the speed by which the object moves when it covers unequal distances at equal periods of time.

2

(A) 1. Stars explosion phenomenon.

2. Long-sightedness.

3. Telophase I of meiotic division.

(B) 1. Gaseous clouds of hydrogen and helium are produced with a percentage of 75% : 25% respectively, and through millions of years these gases produce the galaxies, stars and universe.

2. The extensions of the diverged refracted light rays are meet at a point called virtual focus.

(C) 1. Metaphase I of meiotic division.

- The spindle fibers begin to skrink, so every two homologous chromosomes move away from each other.

- Each one of the two homologous chromosomes migrates toward one of the cell's poles.

- Therefore, two groups of chromosomes are formed at the cell's poles.

$$2. \vec{V} = \frac{\vec{d}}{t} = \frac{10}{5} = 2 \text{ m/sec. in a certain direction.}$$

Total distance = $10 + 10 = 20 \text{ m.}$

3

(A) 1. 40 cm. 2. (1 : 1) 3. 40 km/h.

(B) 1. $V_1 = \frac{200}{4} = 50 \text{ m/sec.}$

$$V_1 = 50 \text{ m/sec. } a = -2 \text{ m/sec}^2 \quad t = 12 \text{ sec. } V_2 = ?$$

$$a = \frac{V_2 - V_1}{t}$$

$$-2 = \frac{V_2 - 50}{12}$$

$$-24 = V_2 - 50$$

$$V_2 = 26 \text{ m/sec.}$$

2. The number of resulting cells = 4 cells.

The number of chromosomes in each cell = 20 chromosomes

(C) 1. Concave mirror – convex mirror.

2. Big Bang theory – crossing star theory.

4

(A) 1. 0° – the focus.

2. centre – the spiral arms.

3. Planets – the centre of Milky Way galaxy.

(B) 1. This means that it is a physical quantity which has magnitude only and has no direction.

2. This means that the focal length of the lens equals 10 cm.

(C) 1. Because the plant stem needs to grow and to compensate the damaged cells, while plant anther needs to produce pollen grains.

2. Because the train moves with a speed equals 20 m/sec. ($72 \times \frac{5}{18}$), while the car moves with a speed equals 30 m/sec.

16 Beni-Suef Governorate

1

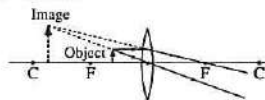
- (A) 1. anaphase
3. double
- (B) 1. Mass : scalar physical quantity.
Force : vector physical quantity.
2. Long-sightedness : the image formed behind the retina.
Short-sightedness : the image formed in front of the retina.
- (C) 1. a. 23 chromosomes
b. 46 chromosomes
$$\bar{V} = \frac{d_1 + d_2 + d_3 + d_4}{t}$$
$$= \frac{10 + 5 + 10 + 5}{30} = \frac{30}{30} = 1 \text{ km/min}$$

2

- (A) 1. b 2. c 3. b
- (B) 1. $V_{(A)} = \frac{25}{2} = 12.5 \text{ m/sec.}$
 $V_{(B)} = \frac{25}{5} = 5 \text{ m/sec.}$
 $V_{(A)} : V_{(B)} = 2.5 : 1$
2. Virtual, erect and diminished.
- (C) 1. It will produce 4 cells.
2. Zero acceleration.

3

- (A) 1. (X) 2. (X) 3. (✓)
- (B) 1. 110°
2. When the object moves in a straight line in one direction.
- (C) 1. Convex lens.



2. a. Budding.
b. Formation of zygote that contains the diploid number of chromosomes of the living organism.

4

- (A) 1. Focus. 2. Milky Way galaxy.
3. Modern theory.

- (B) 1. Because the reflected light rays or their extensions are don't intersect.
2. Because its displacement equals zero,
where velocity = $\frac{\text{displacement}}{\text{time}}$

- (C) 1. Prophase I of meiotic division.
– It works on the variation of genetic traits among the members of the same species, where it contributes in the exchange of genes (that carry genetic traits) between the two homologous chromosome's chromatids, and distributing them randomly in the gametes.
2. During (CD) :
$$a = \frac{V_2 - V_1}{\Delta t} = \frac{0 - 60}{1} = -60 \text{ m/sec}^2$$

(negative acceleration)

17 Minia Governorate

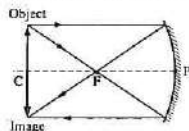
1

- (A) 1. chromosome 2. 10
3. diminished.
- (B) 1. Long-sightedness occurs, where the image of near objects formed behind the retina.
2. Its acceleration equals zero.
- (C) 1. Prophase I of meiotic division.
2. During (AB) : the body moves with a positive uniform acceleration.
During (BC) : the body moves with uniform speed (zero acceleration).

2

- (A) 1. b 2. d 3. a
- (B) 1. The plane (A) moves in the opposite direction of wind, the value of its velocity decreases due to the resistance of the wind, so the time of the trip increases and therefore the amount of the fuel consumed increases.
While the plane (B) moves in the same direction of wind, the value of its velocity increases, so the time of the trip decreases and therefore the amount of the fuel consumed decreases.

2.



The properties of the formed image :
Real, inverted and equal to the object.

- (C) 1. Length : scalar physical quantity.
 Force : vector physical quantity.
 2. Somatic cell : produce two cells.
 Reproductive cell : produce four cells.

3

- (A) 1. Galaxy. 2. Speed.
 3. Cataract.
- (B) 1. Place the mirror on the holder in front of the light box.
 – Move the mirror nearer and farther until an image of the hole is formed next to it and is equal to it.
 – Measure the distance between the mirror and the formed image of the hole.
 – The position of the formed image of the hole is called the centre of the mirror curvature.
 – The distance between the mirror and the formed image of the hole is called the radius of mirror curvature, where $r = 2f$.
2. a. Distance = $AB + BC + CD$
 $= 11 + 4 + 3 = 18 \text{ m.}$
 b. Displacement = $AB + BD$
 $= 11 + \sqrt{4^2 + 3^2}$
 $= 11 + 5$
 $= 16 \text{ m. in east direction}$
- (C) 1. When the object at a distance less the focal length of the convex lens.
 2. a. 6 chromosomes.
 b. 12 chromosomes.

4

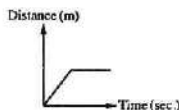
- (A) 1. centrifugal 2. double
 3. 1 : 3
- (B) 1. Placed on the right and the left sides of the driver, the rest are uses of the concave mirror.
 2. $\text{m} \times \text{sec}^{-2}$, the rest are measuring units of speed.
- (C) 1. – Yeast fungus reproduces by budding.
 – Starfish reproduces by regeneration.
 2. Relative speed = actual speed + observer's speed
 $120 = \text{actual speed} + 70$
 $\text{actual speed} = 120 - 70$
 $= 50 \text{ km/h.}$

18 Assiut Governorate

1

- (A) 1. Gravity force.
 2. Crossing over phenomenon.
 3. Galaxies.

(B) First :



Second :

- a. Distance between p_1 and $p_2 = 3 \text{ m.}$
 b. (1 : 1)

(C) 1. Velocity = $\frac{\text{displacement}}{\text{time}}$

– Measuring unit : m/sec. in a certain direction

$$\text{Average speed} = \frac{\text{total distance}}{\text{total time}}$$

– Measuring unit : m/sec.

2. a. Sponge.

b. Starfish.

2

- (A) 1. centrosomes – condensing cytoplasm
 2. parallel – time.
 3. convex – concave
- (B) 1. When the body moves in straight line in one direction.
 2. Real, inverted and diminished.
- (C) 1. Because it measures the speed directly.
 2. Because it prepares the cell for division by :
 – Occurrence of some important biological processes.
 – Duplicating the genetic material (DNA).

3

- (A) 1. (X) 2. (X) 3. (✓)
- (B) 1. The body is moving by positive uniform acceleration.
 2. Short-sightedness occurs, where the image of the far objects formed in front of the retina.
- (C) First : 1. Relative speed
 $= \text{actual speed} + \text{observer's speed}$
 $= 25 + 20 = 45 \text{ m/sec.}$
 2. Car (A) : $t = \frac{d}{v} = \frac{100}{20} = 5 \text{ sec.}$
 Car (B) : $d = v \times t = 25 \times 5 = 125 \text{ m.}$
- Second : a. Figure (2).
 b. (1). Figure (3).
 (2). Figure (1).
 (3). Figure (3).

4

- (A) 1. b 2. c 3. c
- (B) 1. This means that the object speed increases by 10 m/sec. each one second.
2. This means that the distance between the focus and the optical centre of the lens equals 5 cm.
- (C) Figure (1) : path (2).
Figure (2) : 60°
Figure (3) : a. anaphase II. b. half.

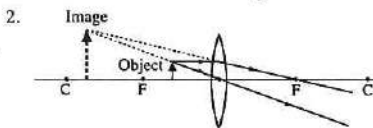
19 Soham Governorate

1

- (A) 1. b 2. c 3. b
- (B) 1. The spindle fibers will not formed and the cell division isn't completed.
2. It will reflect on itself, where the angle of incidence equals the angle of reflection equals zero.
- (C) 1. It is a cell produced due to fertilization and it contains the diploid number of chromosomes of the living organism.
2. The angle of incidence = the angle of reflection.
3. It is the ability of the missing part in some living organisms to grow forming a complete organism identical to the parent individual.
4. It is a glowing gaseous sphere revolving around itself, from which the solar system was originated.

2

- (A) 1. harmony – order
2. 50 – same.
3. budding – binary fission.
- (B) 1. In case of convex lens the image is magnified.
In case of concave lens the image is diminished.



- (C) a. 1. 8 cells.
2. 20 chromosomes.
- b. $V_1 = 60 \text{ m/sec.}$ $a = -2 \text{ m/sec}^2$ $t = 10 \text{ sec.}$ $V_2 = ?$

$$a = \frac{V_2 - V_1}{t}$$

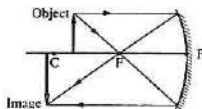
$$-2 = \frac{V_2 - 60}{10}$$

$$-20 = V_2 - 60$$

$$V_2 = 60 - 20 = 40 \text{ m/sec.}$$

3

- (A) 1. 12000 2. 4 m/sec. 3. 4 cm.
- (B) 1.



2. The properties of the formed image :
Real, inverted and magnified.
– The position of the formed image :
At a distance greater than double of the focal length.
- (C) a. 1. Crossing over phenomenon.
2. It works on the variation of genetic traits among the members of the same species, where it contributes in the exchange of genes (that carry genetic traits) between the two homologous chromosome's chromatids and distributing them randomly in the gametes.
b. The distance that the mirror moves = 0.5 m.
The mirror moves toward the body.

4

- (A) 1. Vegetative reproduction.
2. Principal axis.
3. Centromere.
- (B) 1. Type : Short-sightedness.
Reasons : – Increase in the eyeball diameter.
– Increase in the convexity of the eye lens surface.
2. Corrected : by using concave lens, which diverges the rays coming from far object before falling on the eye so the image of the far object is formed exactly on the retina.

(C) a.

Anaphase in mitotic cell division	Anaphase I in first meiotic cell division
– The centromere of each chromosome splits lengthwise into two halves, so the chromatids separate from each other.	– The spindle fibers begin to shrink, so every two homologous chromosomes move away from each other.
– The spindle fibers begin to shrink and two identical groups of chromosomes (each chromosome contains single chromatid) are formed.	– Each one of the two homologous chromosomes (each chromosome contains two chromatids) migrates towards one of the cell's poles.
– Each group of chromosomes migrates towards one of the cell's poles.	– Therefore, two groups of chromosomes are formed at the cell's poles.

- b. 1. Total distance = $1 + 1 + 1 + 1 + 1 = 5$ m.
2. Displacement = 3 m. in east direction.

20 Qena Governorate

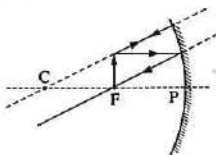
1

- (A) 1. smaller than
2. collects
3. zygote.

(B) 1. First case : $V = \frac{d}{t} = \frac{250}{5} = 50$ m/sec.

Second case : $V = \frac{d}{t} = \frac{400}{8} = 50$ m/sec.

2. Because the reflected light rays and also their extensions are parallel so, they do not intersect.



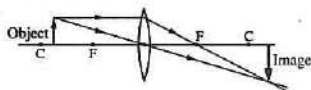
- (C) 1. Graph (1) : Object is at rest.
Graph (2) : Object moves with regular speed.
2. Binary fission – bacteria.

2

- (A) 1. (X) 2. (X) 3. (✓)

(B) 1. $\bar{V} = \frac{d_1 + d_2 + d_3 + d_4}{t} = \frac{10 + 5 + 10 + 5}{1 \times 60} = \frac{30}{60} = 0.5$ m/sec.

2.



The properties of the formed image :
Real, inverted and magnified.

- (C) 1. Displacement = $80 - 20 = 60$ m. in northward direction—when it returns back to its starting point.
2. Somatic cells divide by mitosis.
Reproductive cells divide by meiosis.

3

- (A) 1. a 2. b 3. c

- (B) 1. Time is a scalar physical quantity.
– Acceleration and force are vector physical quantities.

2. The angle of incidence = $150^\circ - 90^\circ = 60^\circ$
The angle of reflection = the angle of incidence = 60°

- (C) 1. Erect and virtual.

2. Crossing over phenomenon :

- It is a phenomenon that takes place at the end of prophase I in which some parts of the two inner chromatids of each tetrad are exchanged to produce new genetic arrangements.

Importance of the crossing over phenomenon :

- It works on the variation of genetic traits among the members of the same species, where it contributes in the exchange of genes (that carry genetic traits) between the two homologous chromosome's chromatids, and distributing them randomly in the gametes.

4

- (A) 1. Optical centre

2. Nebula.

3. Milky Way galaxy.

(B) 1. $V_1 = 0$ $V_2 = 50$ m/sec. $t = 5$ sec. $a = ?$
 $a = \frac{V_2 - V_1}{t} = \frac{50 - 0}{5} = 10$ m/sec²

2. Type : short-sightedness.

Reason : Increase in the diameter of the eyeball. Role of the lens that correct this defect : Diverges the rays that coming from far objects before falling on the eye, so the image of the far objects are formed exactly on the retina.

(C) 1. Velocity = $\frac{\text{displacement}}{\text{time}} = \frac{100}{25} = 4$ m/sec.
in east direction

2. Centromere – anaphase of mitotic cell division.

21 Luxor Governorate

1

- (A) 1. focus. 2. zygote. 3. zero.

- (B) 1. When the light ray falls passing through the centre of curvature of the mirror.
2. When the body returns to its primary position of movement, where the final position of movement is the same as its primary position.

- (C) 1. Acceleration : Vector physical quantity.

– Mass : scalar physical quantity.

2. Liver cell in the human : spindle fibers formed from the centrosomes.

– Leave cell in the plant : spindle fibers formed from condensing the cytoplasm.

2

- (A) 1. Galaxies. 2. Concave lens.
3. Asexual reproduction.
- (B) 1. This means that the object moves at a regular speed equals 5 m/sec.
2. This means that it cannot be received on a screen.
- (C) Figure (1) : Part (AB) the object moves with positive acceleration.
Part (CD) the object moves with negative acceleration.

Figure (2) :

- 1- crossing over phenomenon.
2- It works on the variation of genetic traits among the members of the same species, where it contributes in the exchange of genes (that carry genetic traits) between the two homologous chromosome's chromatids, and distributing them randomly in the gametes.

3

- (A) 1. c 2. b 3. b

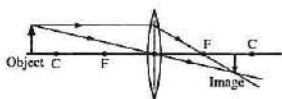
- (B) 1. The type of mirror is convex mirror.

$$\text{The focal length} = \frac{16}{4} = 4 \text{ cm.}$$

$$2. T_1 = \frac{d_1}{V_1} = \frac{50}{5} = 10 = \text{sec.}$$

$$\bar{V} = \frac{d_1 + d_2}{t_1 + t_2} = \frac{50 + 160}{10 + 20} = \frac{210}{30} = 70 \text{ m/sec.}$$

- (C) 1.



- The properties of the formed image :
Real, inverted and diminished.

2.



- The chromosomes which are connected with the spindle fibers are arranged at the cell equator.

4

- (A) 1. 3 : 1

2. One principal axis.
3. 220 million years.

- (B) 1. The relative speed of a moving object relative to the observer who is moving in the opposite direction, because :

The relative speed = Real speed + observer's speed.

2. The virtual image of the object at a distance less than focal length of the convex lens, because : the image in concave lens is diminished while in convex lens is magnified.

- (C) 1. The lost arm will be compensated by regeneration in the starfish.

– The arm which contains a part of the central disc will be reproduced by regeneration forming a new complete starfish

2. The value of its velocity increases, so the time of the trip decreases and therefore the amount of the fuel consumed decreases.

22 Aswan Governorate

1 b

2 vegetative reproduction.

3 refracts

4 This means that the object is in a state of motion.

5 The speedometer.

6 It is the speed of a moving object relative to a static or a moving observer.

7

P.O.C	Animal cell	Plant cell
Formation of spindle fibers	The spindle fibers formed by the centrosomes	The spindle fibers are formed from condensing the cytoplasm at two poles of the cell, because in plant cell there is no centrosomes.

8 d

9 (x)

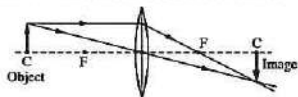
10 centre

11

Because the angle of incidence equals the angle of reflection equals zero.

12

- ∴ No image is formed at a distance equals 5 cm.
- ∴ The object put at the focus of the lens, and the focal length equals 5 cm.
- ∴ The object moves 5 cm. away from the lens.
- ∴ The object put at the centre of curvature of the lens, and the radius of curvature equals 10 cm.



– The properties of the formed image :
Real, inverted and equal to the object.

13

$$V_1 = 0 \quad V_2 = 25 \text{ m/sec.} \quad t = 10 \text{ sec.} \quad a = ?$$

$$a = \frac{V_2 - V_1}{t} = \frac{25 - 0}{10} = 2.5 \text{ m/sec}^2$$

14

1. Meiotic cell division.
2. Formation of male and female gametes.

15 b**16** Long-sightedness.**17** (✓)**18** Contact lenses.

19 To monitor cars movement on these narrow roads and corners to avoid accidents, where it forms virtual, erect and diminished images.

20 Fertilization process will not occurs, and the zygote will not formed.

21

1. Negative acceleration.
2. Non-uniform speed.

22 (X)**23** Big Bang theory.**24** 8 cm.**25**

Because the metro moves forward or backward in a straight path or curved path or combination of both.

$$\mathbf{26} \quad V = 72 \times \frac{5}{18} = 20 \text{ m/sec.}$$

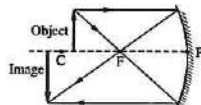
27 The damaged cells will be compensated by mitotic cell division.

28 It will pass without any refraction.

23 Red Sea Governorate

1

- (A) 1. prophase I – meiotic.
2. concave – convex
3. direction – magnitude.
- (B) 1. Relative speed. 2. Light reflection.
- (C) 1.



- The position of the image from the mirror :
At a distance greater than double the focal length.
2. a. 6 chromosomes. b. 12 chromosomes.

2

- (A) 1. Real image.
2. The Big Bang theory.
3. A sperm.
- (B) 1. Because the speed of the object changes according to the condition of the road.
2. Because the refracted light rays or their extensions are parallel to each other and don't intersect.
- (C) 1. $V_1 = 20 \text{ m/sec.} \quad V_2 = 0 \quad t = 2 \text{ sec.} \quad a = ?$
- $$a = \frac{V_2 - V_1}{t}$$
- $$= \frac{0 - 20}{2} = -10 \text{ m/sec}^2.$$
- (negative uniform acceleration).
2. a. Metaphase.
b. Mitotic cell division.

3

- (A) 1. c 2. d 3. b
- (B) 1. It is used to identify the speed of cars and planes directly.
2. It is used instead of the medical glasses to treat the vision defects.
- (C) 1. concave lens : virtual focus.
convex lens : real focus.
2. Sexual reproduction : two parental individuals.
Asexual reproduction : one parental individual.

4

- (A) 1. changing. 2. Sun 3. nuclear
- (B) 1. Virtual, erect and diminished image will be formed.
2. The displacement will equal zero.
- (C) 1. a. An object is at rest.
b. An object moves with irregular speed.
2. a. Regeneration.
b. Spore propagation.

24 North Sinai Governorate**1** real**2** centre of galaxy.**3** nebular**4** The observer condition is moving in the same direction of the car.

– Relative speed = actual speed – observer's speed
 $20 = 70 - \text{observer's speed.}$

Observer's speed = $70 - 20 = 50 \text{ km/h.}$

5 The paper can be burnt, because convex lens can converge and concentrate the parallel rays of sunlight in a point (real focus).**6**

$$\bar{V} = \frac{AB + BC + CD}{t}$$

$$= \frac{(AB + CD) + BC}{t}$$

$$= \frac{(22) + 14}{10} = \frac{36}{10} = 3.6 \text{ m/sec.}$$

$$\bar{V} = \frac{\bar{d}}{t} = \frac{AD}{t} = \frac{14}{10} = 1.4 \text{ m/sec.}$$

7

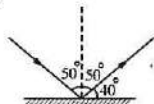
- Reproduction by budding.
- The part (1) is the bud which is connected to the parent cell grows gradually until it is fully grown, then it may :
- Remain connected to the parent cell forming a colony.
 - Separate from the parent cell and becomes a new fungus.

8 direction.**9** cornea**10** The Sun**11** Mass : scalar physical quantity.

Force and displacement : vector physical quantities.

12

The angle incidence = the angle of reflection
 $= 90^\circ - 40^\circ = 50^\circ$

**13**

P.O.C	Concave mirror	Concave lens
Type of principal focus	Real focus.	Virtual focus.
The effect on the parallel incident light rays	Converging them.	Diverging them.

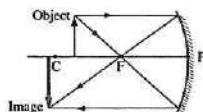
14

- Formation of male and female gametes.
 – 8 chromosomes.

15 The focal length of the lens.**16** The universe.**17** The chromosomes.**18**

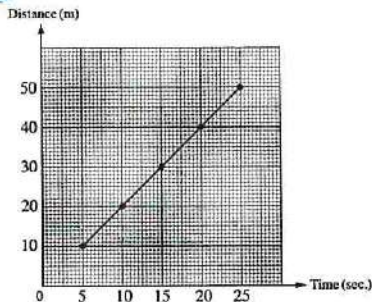
- $a = \frac{V_2 - V_1}{t} = \frac{60 - 0}{t} = 20 \text{ m/sec}^2$
 – Negative uniform acceleration.

19



The properties of the formed image :
Real, inverted and magnified.

20



This object moves with uniform speed.

21

- Crossing over phenomenon.
- It occurs at the end of prophase I of meiotic division.
- No variation of genetic traits among the members of the same species will happen.

22 d

23 b

24 c

25

$$V_1 = \frac{d_1}{t_1} = \frac{80}{2} = 40 \text{ m/sec.}$$

$$V_2 = \frac{d_2}{t_2} = \frac{120}{2} = 60 \text{ m/sec.}$$

- This object doesn't move at a regular speed, because $V_1 \neq V_2$ which means it doesn't cover equal distances at equal time intervals.

26

- Short-sightedness.
- Reasons : Increase in the eyeball diameter.
- Increase in the convexity of the eye lens surface.

27

Centrosome : Formation of spindle fibers.

Interphase : prepares the cell for division by :

- Occurrence of some important biological processes.
- Duplicating the genetic material (DNA).

28

$$\begin{aligned} \bar{V} &= \frac{AB + BC + CD + DE}{t} \\ &= \frac{13 + 5 + 13 + 5}{0.5} = \frac{36}{0.5} = 72 \text{ km/h} \\ &= 72 \times \frac{5}{18} = 20 \text{ m/sec.} \end{aligned}$$

25 South Sinai Governorate

1 d

2 c

3 d

4

$$V_x = \frac{d_x}{t} = \frac{60}{1} = 60 \text{ km/h.}$$

$$V_y = \frac{d_y}{t} = \frac{20}{1} = 20 \text{ km/h.}$$

$$d_x = V_x \times 0.5 = 60 \times 0.5 = 30 \text{ km.}$$

$$d_y = V_y \times 0.5 = 20 \times 0.5 = 10 \text{ km.}$$

$$\frac{d_x}{d_y} = \frac{30}{10} = \frac{3}{1}$$

- 5 Because the angle of incidence equals the angle of reflection equals zero.

6

Displacement = 50 m. westward direction.

$$\text{Velocity} = \frac{\bar{d}}{t} = \frac{50}{10 + 5} = 3.33 \text{ m/sec. westward direction.}$$

7

Figure (2) : meiotic cell division

Figure (1) : compensating the damaged cells.

8 d

9 Reproduction by seeds.

10 (X)

11

$$a = \frac{V_2 - V_1}{t} = \frac{40 - 0}{2} = 20 \text{ m/sec}^2, \text{ positive acceleration.}$$

12

- Short-sightedness.
- Concave lens.

13

- Reproduction by regeneration.
- It will not regenerate to form a new complete starfish, so it cannot reproduce by regeneration.

14

$$V_A = 20 \text{ m/sec.}$$

$$V_B = 90 \text{ km/h.} = 90 \times \frac{5}{18} = 25 \text{ m/sec.}$$

$$\text{Relative speed} = \text{real speed} - \text{observer's speed} \\ = 25 - 20 = 5 \text{ m/sec.}$$

15 5

16 75

17

$$V_1 = \frac{d}{t} = \frac{200}{20} = 10 \text{ m/sec.}$$

$$a = \frac{V_2 - V_1}{t} = \frac{0 - 10}{5} = -2 \text{ m/sec}^2$$

18

Because it is a physical quantity that has magnitude and direction.

19 Virtual, erect and magnified.

20

Anaphase in mitotic cell division	Anaphase I in meiotic cell division
The centromere of each chromosome splits lengthwise into two halves, so the chromatids separate from each other.	The centromere of each chromosome doesn't split lengthwise into two halves.

21

- Angle number (1)
- Angle of incidence = $90^\circ - 40^\circ = 50^\circ$
- The angle of reflection = the angle of incidence = 50°

22 Convex mirror.

23 Big Bang theory.

24 a

25

Figure (1), because it is a real focus formed as a result of collection of the refracted light rays.

26

$$a = \frac{V_2 - V_1}{t} = \frac{50 - 0}{5} = 10 \text{ m/sec}^2$$

$$a = \frac{V_2 - V_1}{t}$$

$$10 = \frac{V_2 - 0}{20}$$

$$V_2 = 200 \text{ m/sec.}$$

27

Speedometer : used in identifying the speed of cars and planes directly.

Graphs and tables : predict the relation between certain physical quantities.

28

In Ovum = 23 chromosomes.

In skin cell = 46 chromosomes.

26 New Valley Governorate

1

- (A) 1. The universe. 2. Real image.
3. Metaphase.
- (B) 1. When the observer is static.
2. When the light ray incident with an angle 30°
- (C) 1. First : acceleration equals zero.

$$\text{Second : } V_1 = \frac{d}{t} = \frac{100}{5} = 20 \text{ m/sec.}$$

$$a = \frac{V_2 - V_1}{t} = \frac{0 - 20}{5} = -4 \text{ m/sec}^2$$

2. First : crossing over phenomenon.

Second : Prophase I of meiotic division.

2

- (A) 1. budding. 2. distance. 3. reflection.
- (B) 1. Because the speed of the car changes according to the conditions of the road.

2. To avoid passenger injury at opening and closing the metro doors, where it forms virtual, erect and diminished image.

(C) 1. First : 6 chromosomes.

Second : 12 chromosomes.

2. First : period (BC).

Second : period (AB).

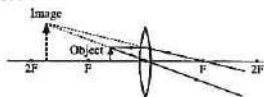
3

(A) 1. Eight

2. 10 cm

3. Fred Hoyle.

(B) 1. First :



Second : Virtual, erect and magnified.

2. First : scalar physical quantity.

Second : vector physical quantity.

Third : scalar physical quantity.

(C) 1. (a) 20 m/sec East

(b) 40 m. North.

2. First : are formed by centrosomes.

Second : are formed from condensing the cytoplasm at two poles of the cell.

4

(A) 1. d

2. b

3. a

(B) 1. This means that the total distance covered by the object through one hour equals 90 km.

2. This means that the distance between the centre of mirror curvature and any point on its reflecting surface equals 7 cm.

(C) 1.

P.O.C	Asexual reproduction	Sexual reproduction
The genetic traits of the resulted offspring	The new offspring gets a full copy of the parent individual's genetic traits	The new offspring combines the genetic traits from two sources (male and female).
The type of division on which reproduction depends	Mitotic cell division.	Meiotic cell division.

2. First : Long-sightedness.

Second : By using convex lens which collects the rays of the near objects before falling on the eye, so the image of the near object is formed exactly on the retina.

27

Matrouh Governorate

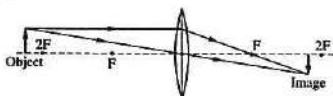
1

(A) 1. c

2. b

3. b

(B) 1.



2. a. Distance = AB + BC + CM

$$= 2 + \left(\frac{1}{2} \times 2 \times \frac{22}{7} \times 7\right) + 7$$

$$= 2 + 22 + 7 = 31 \text{ cm.}$$

b. Displacement = AB + BM

$$= 2 + 7 = 9 \text{ cm east direction}$$

(C) 1. – Asexual reproduction, it takes place by only one living organism and keeps the genetic structure of the living organism.

– Binary fission

2. $V_1 = 72 \text{ km/h}$

$$= 72 \times \frac{5}{18}$$

$$= 20 \text{ m/sec.}$$

$$a = \frac{V_2 - V_1}{t} = \frac{0 - 20}{20} = -1 \text{ m/sec}^2$$

Negative acceleration.

2

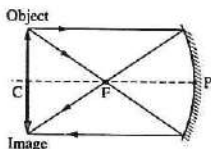
(A) 1. (X)

2. (✓)

3. (✓)

(B) 1. When the observer moves with the same speed of the object and in the same direction, because the relative speed = real speed – observer's speed.

2.



– The properties of the formed image :

Real, inverted and equal to the object.

- (C) 1. a. crossing over phenomenon—prophase I—meiotic
b. inner chromatids.

2. a. Body (A) :

$$V = \frac{d}{t} = \frac{2}{1} = \frac{4}{2} = \frac{6}{3} = 2 \text{ m/sec. regular speed}$$

Body (B) :

$$V = \frac{d}{t} = \frac{2}{2} = \frac{4}{4} = \frac{6}{6} = 1 \text{ m/sec. regular speed}$$

b. $\frac{V_A}{V_B} = \frac{2}{1}$

3

(A) 1. Time. 2. Laplace. 3. Thick.

(B) 1. Total distance = $V \times t$

$$= 25 \times 2 = 50 \text{ km}$$

– (D) covered during the second hour = $50 - 15$
 $= 35 \text{ km.}$

– (V) during the second hour = $\frac{d}{t} = \frac{35}{1}$
 $= 35 \text{ km/h.}$

2. a. Long-sightedness

Reasons :

- Decrease in the eyeball diameter.
- Decrease in the convexity of the eye lens surface.

b. Behind the retina.

(C) 1. Real image : when the reflected or refracted light rays are intersected.

- Virtual image : when the extension of the reflected or refracted light rays are intersected.

2. Reproductive cell : meiosis – (2N)

Gamete : doesn't divide – (N)

4

(A) 1. continuous expansion.

2. concave

3. nebular

(B) 1. focal length = $\frac{\text{diameter}}{4} = \frac{36}{4} = 9 \text{ cm.}$

2. (AB) : positive acceleration.

(BC) : uniform speed (zero acceleration).

(CD) negative acceleration.

(C) 1. a. This means that it is a physical quantity that has magnitude and direction.

b. This means that the body moves in straight line in one direction.

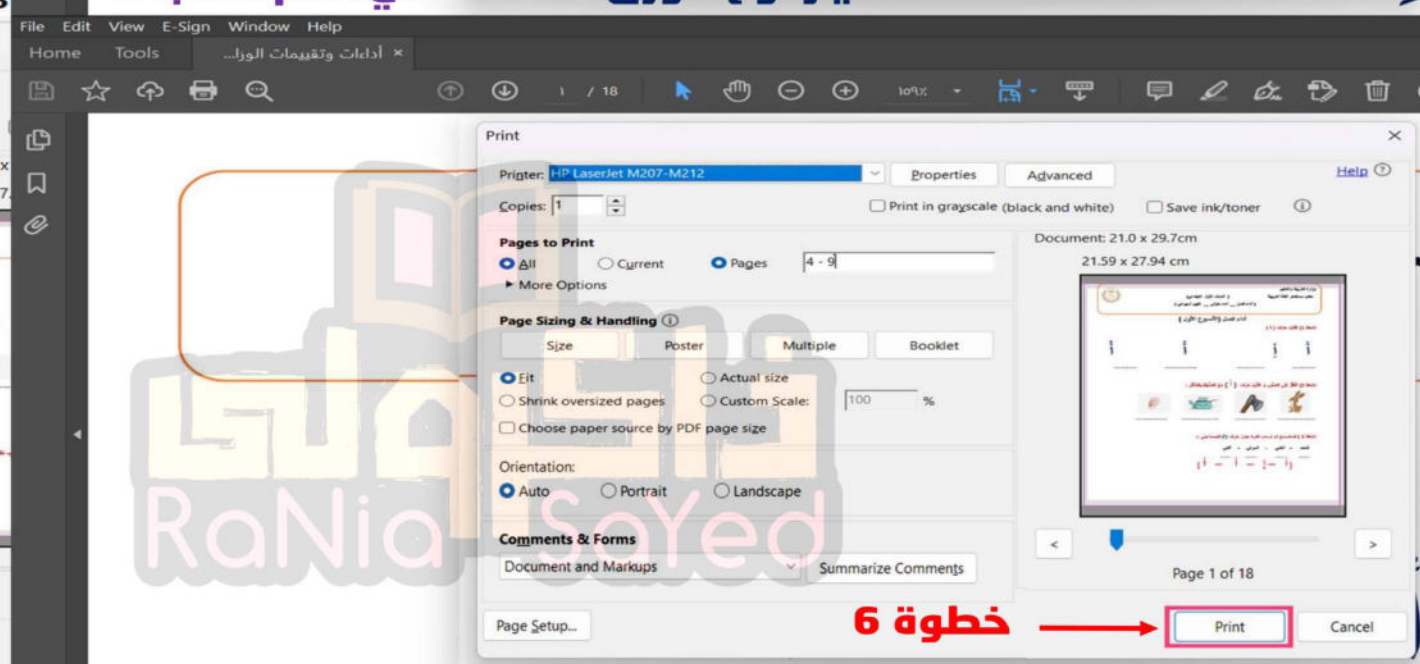
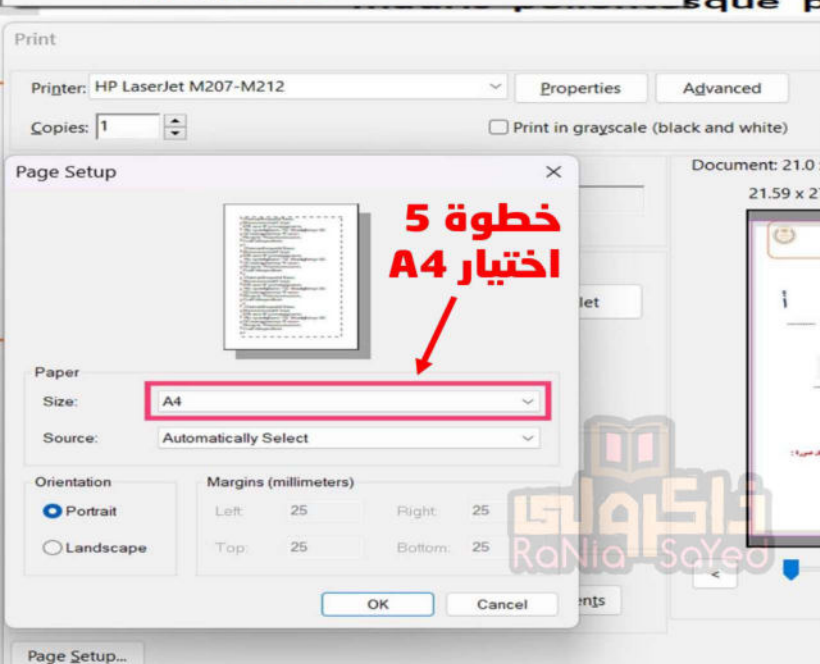
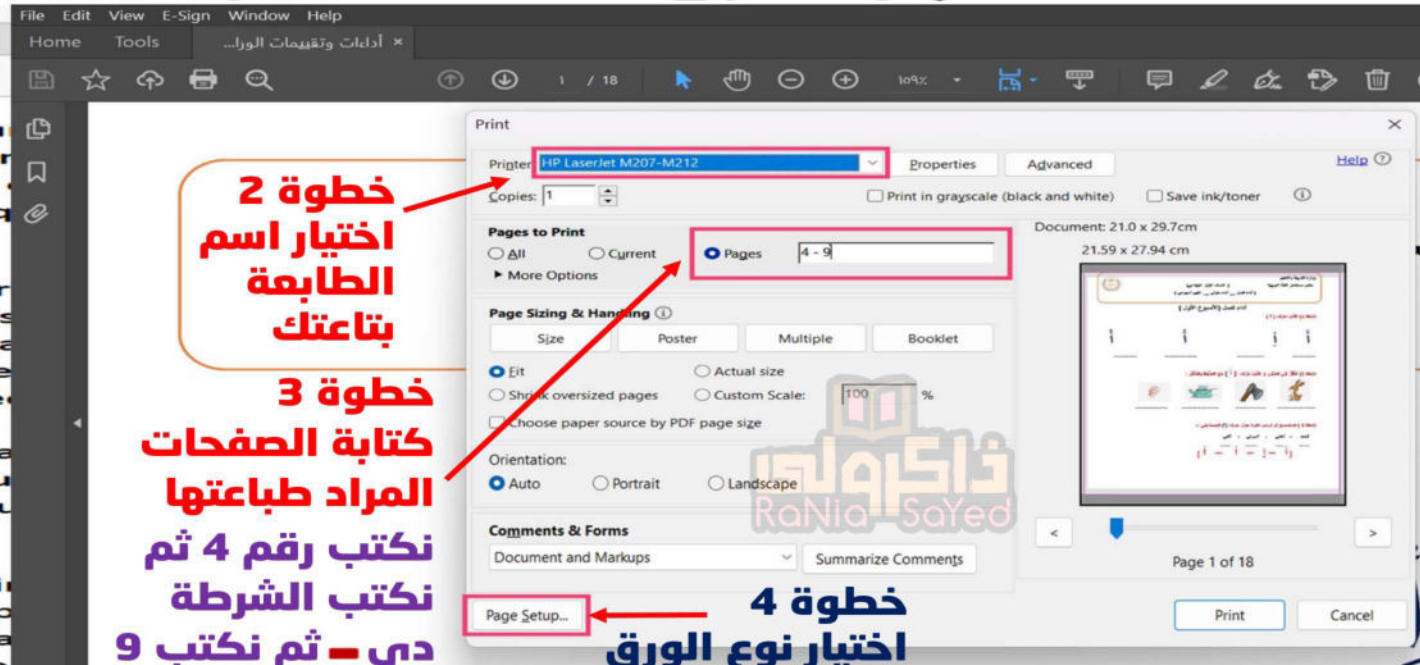
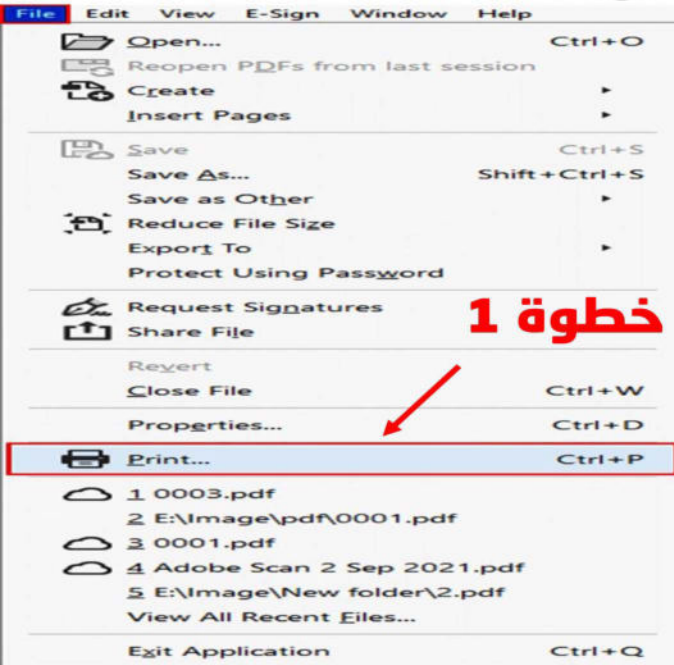
2. a. Mitosis.

– Its importance :

- growth of living organisms.
- compensation of damaged cells.
- completing the asexual reproduction process.

b. Metaphase.

كيفية طباعة صفحات معينة من ملف معين مثلا ازاي نطبع الصفحات من صفحة 4 الى صفحة 9



حمل الآن

مجاناً وحصرياً

امتحانات رقم (2)

الترم الاول



Model Exam 1

Total mark

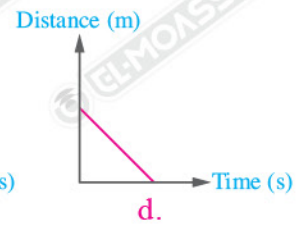
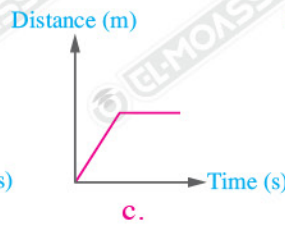
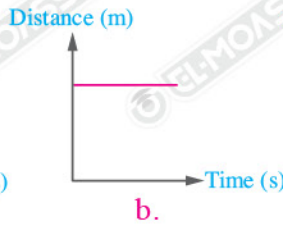
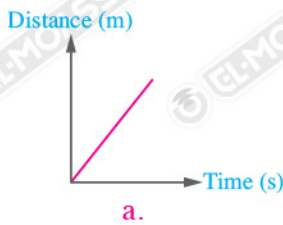
20

Answer the following questions :

Question 1 5 marks

A Choose the correct answer :

1. Which of the following (distance – time) graphs describes an object at rest ?



2. A body of 10 cm length is placed at the centre of curvature of the concave mirror, so the image length equals cm.

- a. 5 b. 7 c. 10 d. 20

3. The mitotic cell division produces two new separate cells each one has the same number of chromosomes of the mother cell

- a. N. b. 2 N. c. 3 N. d. 4 N.

B Give reasons for :

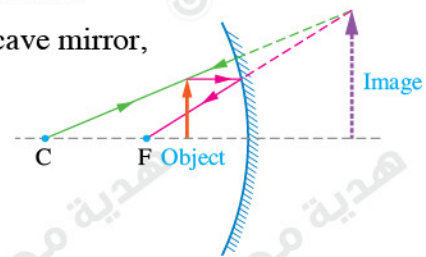
1. The continuous expansion of the universe.
2. Asexual reproduction in some plants doesn't need the presence of seeds.

C Study the opposite figure, then answer the questions below :

The figure represents the formation of an image by a concave mirror,

Answer :

1. Mention the position of the formed image.
2. Mention the properties of the formed image.



Question 2 5 marks

A Complete the following sentences :

1. Spherical mirror that is used on corner of narrow road to monitor the movement of cars is called
2. The phase in which some important vital processes occur to prepare the cell for division is called
3. The far object can be seen clearly for the normal eye at a distance not more than metres.



- B** An object was put in the mid-distance between plane mirror and optical centre of (converge) convex lens its focal length equal (6 cm), the image formed by plane mirror at distance equals (12 cm) from the plane mirror.

Do as shown between brackets :

1. Distance between the plane mirror and the optical centre of the lens equals cm.
(Complete)
2. Length of the formed image by the plane mirror is (more than – less than – equal to) length of the formed image by the convex lens.
(Choose the correct answer)

- C** What are the results based on the following ... ?

1. Increasing the distance between the planets and the Sun.
2. Removing the nucleus from a living cell.

Question 3 5 marks

- A** Put (✓) or (✗) :

1. Sometimes the ratio between the displacement and the distance for a moving body is more than the whole one. ()
2. In 1796 the scientist Laplace published a research entitled world order included his perception about the evolution of the solar system. ()
3. A person moved 40 metres to the north, then returned back 20 metres to the south, so his displacement is 20 metres to the south. ()

- B** A car starts moving from rest till its speed reaches 25 m/s in 10 seconds. Calculate the acceleration with which the car moved.

- C** Study the opposite figure, then answer the questions below :

1. This organism reproduces asexually by
2. This type of reproduction depends on cell division.



Question 4 5 marks

- A** Cross out the odd word :

1. Acceleration – Force – Mass – Displacement.
2. Moulton – Crossing Star theory – Chamberlain – Nebula.
3. m/sec^2 – cm/sec – km/h – m/sec .

- B** Study the figures shown, then answer the following :

1. In figure (1), what is the name of the structure indicated by the letter (x) ?
2. In figure (2) what is the name of the phase that follows the phase that is shown in front of you ?

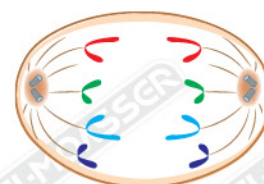


Figure (2)

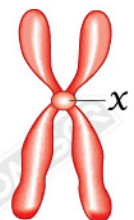


Figure (1)

C Determine the location of each of the following :

1. The solar system.
2. The principal focus of the convex mirror.

Model Exam 2

Total mark

20

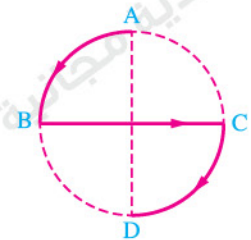
Answer the following questions :

Question 1 5 marks

A Complete the following sentences :

1. An object moves by regular speed when is equal to
2. A real image cannot be formed by a lens, mirrors and a plane mirror.
3. The bread mould fungus reproduces by, while the amoeba reproduces by

B In the corresponding figure, a body moves in a circular path with a radius of (7 metres) and its circumference of (44 metres) from point (A) to point (B), to (C) to (D) within (8 sec.) Calculate :



1. Average speed.
2. Velocity.

C Compare by drawing only between metaphase in mitosis and metaphase (1) in meiosis.

Question 2 5 marks

A Choose the correct answer :

1. When an object with 6 cm length is put in front of a convex reflecting surface, and at a distance from it equals to its radius of curvature, then the length of the formed image is cm.
a. 4 b. 6 c. 8 d. 10
2. If the number of chromosomes in the somatic cell of a certain living organism is 44 chromosome, then its number in the reproductive cell for the same living organism is chromosome.
a. 22 b. 44 c. 66 d. 88
3. An object is placed in front of an optical piece, and its image is formed exactly at the position of the object, so the used optical piece is
a. concave mirror. b. plane mirror.
c. convex lens. d. concave lens.



B Write what do the following expressions mean :

1. The change in the speed of a body in one second.
2. Seeing the far objects clearly but the near objects are not seen clearly.

C What are the results of ...?

1. Galaxies move away from each other.
2. The speed of object increases by time.

Question 3 5 marks

A Write the scientific term of each of the following :

1. It is any straight line that passes by the centre of curvature of mirror and any point on its reflecting surface except the pole of the mirror.
2. It is formed in living organisms from cells known as reproductive cells through meiosis.
3. Special equipment used to study the Sun through its spectrum.

B What happen when ...?

1. Revolving speed of nebula around itself increased.
2. Focusing laser to Nano-molecules of gold present on the cancer cells.

C The opposite table shows the results of an experiment in which an object moves.

This object moves at
(choose and mention the reason)

Distance (m)	10	20	30
Time (sec.)	1	2	3

1. Uniform deceleration.
2. Uniform acceleration.
3. Uniform speed.

Question 4 5 marks

A Put (✓) in front of true statements and (✗) in front of false ones :

1. A train covers 200 km during 100 minutes, so its speed = 2 km/h. ()
2. Algae can reproduce by regeneration. ()
3. The stars explosion phenomenon is resulted from sudden nuclear reaction. ()

B "An Ovum of a female animal contains 8 chromosomes" find :

1. Number of chromosomes in a testis cell of this male animal.
2. Number of chromosomes in a sperm which produced from this male animal.

C What is meant by ... ?

An object's displacement is 20 m in west direction.

Model Exam 3

Total mark

20

Answer the following questions :

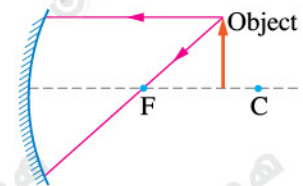
Question 1 5 marks

A Put (✓) or (✗) :

1. The contact lenses are used instead of glasses by putting it on the eye retina. ()
2. During meiotic division, gametes are produced by special cells known as somatic cells. ()
3. By putting a source of light in front of a convex lens, the reflected rays are converged. ()

B Copy the following figure, then :

1. Draw the light rays that form the image of an object.
2. Mention the properties of the formed image.



C What is the importance of each of the following ... ?

1. The gaseous line in the Crossing Star theory.
2. The nucleic acid DNA in the cell chromosome.

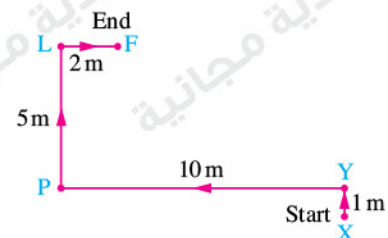
Question 2 5 marks

A Choose from column (B) what suits it in column (A) :

(A)	(B)
1. Contact lenses	a. are used instead of glasses to treat vision defects.
2. The velocity of the wind	b. calculating the amount of fuel to complete the flight and save fuel.
3. Nano-molecules of gold	c. a method of reproduction in yeast fungus.
	d. to detect the cancer cells.

B The opposite figure shows the path of movement for two persons from the same starting point to the end point. Find :

1. The time of motion of the first person to take the path from (X) to (F) passing through the points (Y, P & L) with a speed of 6 m/s.
2. The time of motion of the second person to take the path (X) to (F) directly with a speed of 4 m/s.



C Give reasons for :

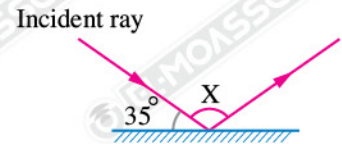
1. The mitosis (mitotic) division plays an important role in the living organisms life.
2. The moving car with a certain speed seems to be at rest to the moving observer with the same speed and same direction.

Answer the following questions :

Question 1 5 marks

A Choose the correct answer in each of the following :

- In the opposite figure, a light ray falls on a plane mirror so the value of angle (x) is
 a. 35° b. 110°
 c. 55° d. 70°
- A static car its speed became 32 m/s after 8 seconds, so the acceleration of motion equals m/s^2 .
 a. 4 b. 0.25 c. 8 d. 24
- The ratio between the velocity of a body moved with a speed of 72 km/h and the velocity of a body moved with a speed of 20 m/s is
 a. 3.62 b. 1 c. 0.28 d. 2



B An object was placed at a distance of (3 cm) from the optical centre of a lens, then upright, magnified image was formed.

- What is the type of the lens ?
- Show by drawing the path of the rays forming the image.

C Mention one example of each of the following :

- A disease that infects the older person's eyes which needs a surgical intervention for its treatment.
- Using Nanotechnology.

Question 2 5 marks

A Put (✓) in front of true statements and (✗) in front of false ones :

- It is said that the object that moves at a constant speed moves at a uniform acceleration. ()
- The scientist who established the Crossing Star theory is Fred Hoyle. ()
- The speed of the car can be identified directly by using the compass. ()

B An ovum of an animal contains 16 chromosomes, determine each of the following :

- Number of chromosomes in the liver cell in this animal.
- Number of chromosomes in the sperm in this animal.

C What are the properties of image that is formed when ...?

1. A child stands in front of a convex mirror.
2. An object is placed at a distance from a concave lens.

Question 3 5 marks

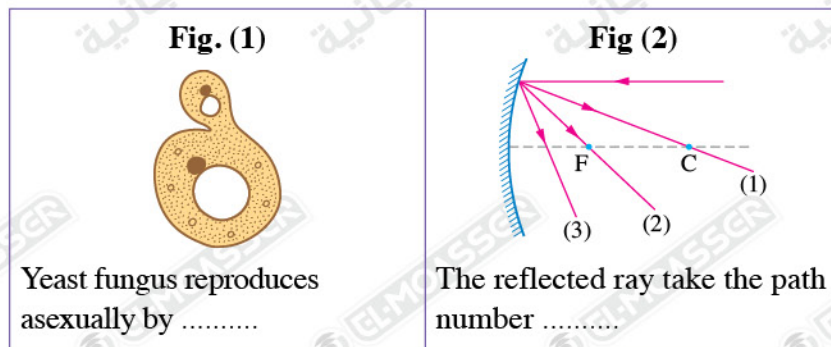
A Write the scientific term of each of the following :

1. Special organs for reproduction in algae and fungi produce spores.
2. The process of exchange of genes between the two inner chromatids of the tetrad and distributing them randomly in the gametes.
3. The distance between the focus of the concave mirror and its pole.

B Give reasons for :

1. The image formed by convex mirror is always virtual.
2. The sexual reproduction produces different individuals.

C Study the following figures, then answer :



Question 4 5 marks

A Correct the underlined words in the following statements :

1. The spindle fibres in the plant cell are formed during cell division from the centromere.
2. The cell is prepared to enter the phases of mitosis division and the genetic material duplicates in prophase.
3. If the angle between reflected ray and reflecting surface is 140° so the angle of incidence equals 40° .

B The opposite table represents the relationship between speed and time for a moving object.

Speed (m/s)	5	10	20	30	35
Time (sec.)	1	2	4	6	7

Represent graphically the relation between the speed and time, then calculate the acceleration by which the body moves.

C Mention the following :

1. Name of the oldest theories that explains the origin of the solar system.
2. A mirror which its reflecting surface is a part of the inner surface of a sphere.

Model Exam

5

Total mark

20

Answer the following questions :

Question 1 5 marks

A Write the scientific term of each of the following :

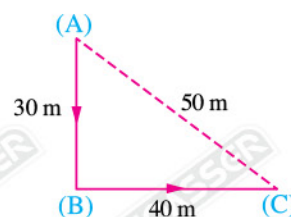
1. It is the change in the position of the object as time passes according to a fixed position.
2. It is the point that is in the middle of the reflecting surface of the mirror.
3. It is the displacement covered in one second.

B What happens in the following cases ...?

1. The crossing over phenomenon does not occur during prophase (I) in meiotic division.
2. If the body is put in front of a convex lens at a distance equals to the focal length.

C In the opposite figure :

If the object moves from point (A) to point (C) passing through point (B) in time of 10 sec. Calculate value of the velocity (write the used law).



Question 2 5 marks

A Correct the underlined words :

1. Pilots take into consideration the average speed of the wind.
2. Euglena reproduces asexually by sporogony.
3. When the object moves by uniform speed, it moves by increasing acceleration.

B Compare between : Scalar physical quantity and vector physical quantity (according to definition).

C Show by drawing :

Formation of an equal image for the object by convex lens, then mention the position of the image.

Question 3 5 marks

A Complete the following statements :

1. A car moves at a regular speed covers 300 metres in half minute, so its speed equals m/sec.

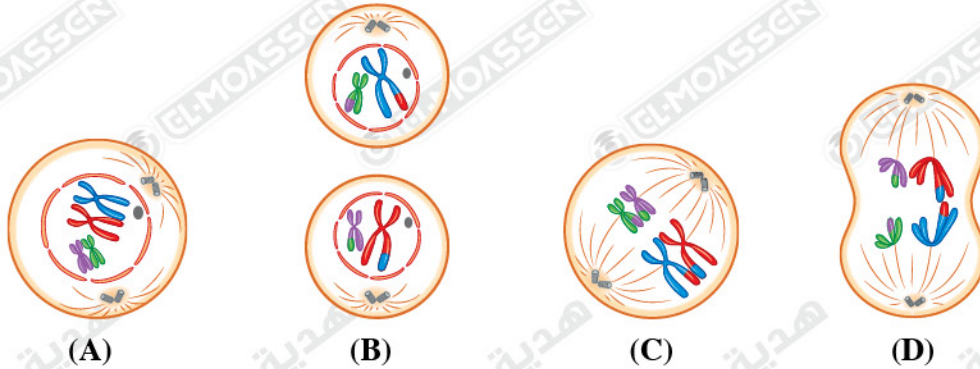


- The upright and equal image is formed by
- The Sun takes about to complete one rotation around the centre of the galaxy.

B Give reasons for the following :

- The word AMBULANCE is written in laterally inverted way on the ambulance car.
- It is practically difficult to a car to move with a regular speed.

C The following microscopic images illustrate the first meiotic division phases :



- Identify each phase.
- Arrange these phases according to the periority of occurrence.

Question 4 5 marks

A Choose the correct answer :

- A convex lens with a focal length of 50 cm, an object was placed at a distance of 80 cm from the lens, the image of the object is formed at a distance from the lens.
 - greater than 100 cm
 - equals 100 cm
 - equals 50 cm
 - equals 30 cm
- The phenomenon of crossing over occurs in the of the first meiotic division.
 - telophase
 - metaphase
 - anaphase
 - prophase
- If the angle between the incident light ray and the reflecting surface is 40° , so the angle of reflection equals
 - zero
 - 40°
 - 50°
 - 80°

B What happens when ... ?

- A light ray is incident by an angle 90° on a plane mirror.
- A meiotic division occurs in the anther of a flowering plant.

C In the opposite figure :

- It represents cell division.
- The produced cell from the fertilization is called



Model Exam 1

1

- (A) 1. b 2. c 3. b
 (B) 1. Because galaxies move away from each other.
 2. Because some plants undergo vegetative reproduction by the plants organs (leaves, roots and stems).
 (C) 1. Behind the mirror.
 2. Virtual, erect and magnified.

2

- (A) 1. convex mirror. 2. interphase. 3. (6)
 (B) 1. 24 cm.
 2. equal to
 (C) 1. Gravity decreases and planets move slower.
 2. It can't undergo cell division.

3

- (A) 1. (X) 2. (✓) 3. (X)
 (B) $a = \frac{V_2 - V_1}{t} = \frac{25 - 0}{10} = 2.5 \text{ m/sec}^2$
 (C) 1. Regeneration 2. mitotic

4

- (A) 1. Mass 2. Nebula 3. m/sec^2
 (B) 1. Centromere 2. Telophase.
 (C) 1. In one of the spiral arms of Milky Way galaxy.
 2. Behind the mirror.

Model Exam 2

1

- (A) 1. average speed – speed at any time
 2. concave – convex
 3. spores – binary fission
 (B) 1. Distance (AB) = $\frac{1}{4} \times 44 = 11 \text{ m}$.
 Distance (BC) = $7 + 7 = 14 \text{ m}$.
 Distance (CD) = $\frac{1}{4} \times 44 = 11 \text{ m}$.
 Total distance = $11 + 14 + 11 = 36 \text{ m}$
 Average speed = $\frac{\text{total distance}}{\text{total time}} = \frac{36}{8} = 4.5 \text{ m/sec}$.
 2. Velocity = $\frac{\text{displacement}}{\text{time}} = \frac{14}{8}$
 = 1.75 m/sec. in the direction $\overrightarrow{AD}$.

(C)



Metaphase

Metaphase I

2

- (A) 1. a 2. b 3. a
 (B) 1. Acceleration. 2. Long-sightedness.
 (C) 1. The universe is in a state of continuous expansion.
 2. The object moves with positive acceleration.

3

- (A) 1. Secondary axis of the mirror.
 2. Gamete. 3. Solar telescope.
 (B) 1. The formed centrifugal force causes the nebula to lose its spherical shape and became in a form of flat rotating disk, separation of parts of nebula in the form of gaseous rings that rotate around the remaining mass.
 2. Light energy changes into heat energy which kills cancer cells not healthy cells.
 (C) (3), because it covers equal distances (10 m) at equal intervals of time (1 sec.),
 as $V = \frac{d}{t} = \frac{10}{1} = \frac{20}{2} = \frac{30}{3} = 10 \text{ m/sec}$.

4

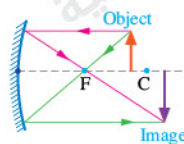
- (A) 1. (X) 2. (X) 3. (✓)
 (B) 1. (16) chromosomes. 2. (8) chromosomes.
 (C) This means that the distance covered in the west direction from the primary position of movement towards its final position equals 20 m.

Model Exam 3

1

- (A) 1. (X) 2. (X) 3. (X)

(B)



Properties : Real – inverted and magnified.

- (C) 1. Formation of planets of the solar system.
 2. Carrying the genetic traits of the living organism.

2

- (A) 1. a 2. b 3. d

(B) 1. $t = \frac{d}{V} = \frac{1 + 10 + 5 + 2}{6} = 3 \text{ sec.}$

2. $t = \frac{d}{V} = \frac{10}{4} = 2.5 \text{ sec.}$

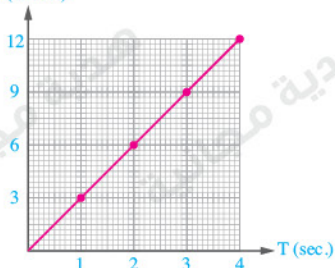
- (C) 1. Because it aims to growth of living organisms and to compensate the damaged cells.
2. Because the relative speed equals the difference between their speeds equals zero.

3

- (A) 1. b 2. c 3. d

- (B) 1. metaphase 2. mitotic

- (C) 1. $V \text{ (m/sec.)}$



2. $a = \frac{V_2 - V_1}{\Delta t} = \frac{12 - 0}{4 - 0} = 3 \text{ m/sec}^2$

4

- (A) 1. straight 2. convex

3. prophase

- (B) 1. Starfish. 2. Plane mirror.

- (C) 1. (6) meters. 2. (2) cells.

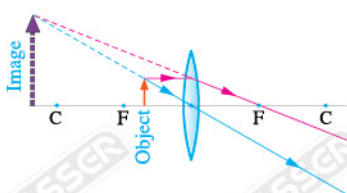
Model Exam 4

1

- (A) 1. b 2. a 3. b

- (B) 1. Convex lens.

- 2.



- (C) 1. Cataract.
2. Discovering and treatment of cancer.

2

- (A) 1. (X) 2. (X) 3. (X)

- (B) 1. (32) chromosomes. 2. (16) chromosomes.

- (C) 1. Virtual, erect and diminished.

2. Virtual, erect and diminished.

3

- (A) 1. Sporangium

2. Crossing over phenomenon.

3. Focal length.

- (B) 1. Because it is formed by intersection of the extensions of reflected light rays, and it can't be received on a screen.

2. Because the resulted offspring combines the genetic traits from two sources, and also the occurrence of crossing over phenomenon in meiosis.

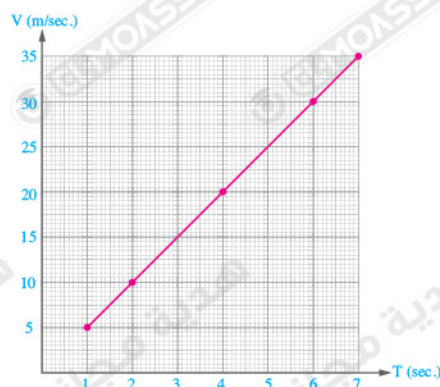
- (C) 1. budding 2. (2)

4

- (A) 1. the condensation of cytoplasm.

2. interphase 3. 50°

- (B)



$a = \frac{V_2 - V_1}{\Delta t} = \frac{35 - 5}{7 - 1} = \frac{30}{6} = 5 \text{ m/sec}^2$

- (C) 1. Nebular theory. 2. concave mirror.

Model Exam 5

1

- (A) 1. Motion.

2. Pole of the mirror.

3. Velocity.

- (B) 1. The genetic variation will not occur between members of the same kind.
2. No image is formed and the refracted light rays pass through the lens as parallel rays.
- (C) Velocity = $\frac{\text{displacement}}{\text{time}} = \frac{50}{10} = 5 \text{ m/sec.}$
in the direction $\overrightarrow{AC}$.

2

- (A) 1. Velocity 2. binary fission
3. zero

Scalar physical quantity	Vector physical quantity
It is the physical quantity that has magnitude only and has no direction.	It is the physical quantity that has magnitude and direction.



- The position of the image : At the centre of curvature (C).

3

- (A) 1. (10) 2. plane mirror
3. 220 million years
- (B) 1. Because the mirrors of the cars in front of the ambulance car, form a laterally inverted image for this word, and thus it appears laterally corrected to the drivers.
2. Because the car's speed changes according to the conditions of the road.
- (C) 1. (A) Prophase I (B) Telophase I
(C) Metaphase I (D) Anaphase I
2. (A) → (C) → (D) → (B)

4

- (A) 1. a 2. d 3. c
- (B) 1. It reflects on itself.
2. Pollen grains are produced.
- (C) 1. meiotic 2. zygote

حمل الآن

مجانا وحصريا

امتحانات رقم (3)

الترم الاول





Final Examinations

of Some Governorates

2024

1 Cairo Governorate

Answer the following questions :

Question 1

A Write the scientific term that represent each of the following statements :

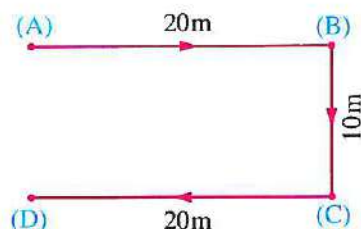
1. The speed of a moving object relative to a static or a moving observer.
2. The straight line that passes by the centre of curvature of the mirror and any point on its surface except the pole.
3. It is formed from the centrosomes in the animal cell during the cell division.
4. The change of an object position as time passes according to a fixed position.

B Write one example for each of the following statements :

1. A division to produce gametes.
2. A mirror, always forms a diminished image for the object although its position changes.
3. A multicellular living organism reproduces asexually by budding.
4. A galaxy contains the Sun and the solar system.

C In the opposite figure, an object starts moving from point (A) to (B), then to (C) stopped at (D), so the value of :

1. The total distance covered by the body is
= metre.
2. The displacement is = metre.



Question 2

A Choose the odd word in each of the following :

1. Ovum – Anther – Testis – Ovary.
2. Reversed – Equal to the body – Upright – Real.
3. Euglena – Starfish – Amoeba – Paramecium.
4. Force – Acceleration – Time – Displacement.

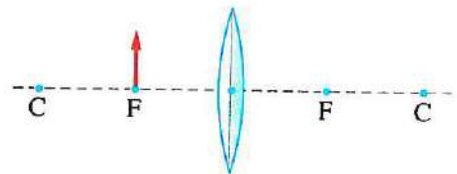


B Choose from column (B) what suits it in column (A) :

(A)	(B)
1. The theory that explains the origin of the universe.	a. average speed.
2. Fusion of a male gamete and a female gamete to form a zygote.	b. an object at rest.
3. The (distance – time) graph of it is represented by a straight line parallel to the time axis.	c. a moving object.
4. The product of dividing the total distance covered by the moving object over the total time.	d. big Bang.
	e. fertilization.

C In the following figure, where does the object's image form ?

And give a reason.



Question 3

A Complete the following sentences :

1. The is chemically consists of nucleic acid and protein.
2. Velocity is the value of at one second.
3. In the universe, groups of stars gathered to form
4. The lens is a transparent medium that the light and is limited with two spherical surfaces.

B Study the following figures, then answer the questions below each :

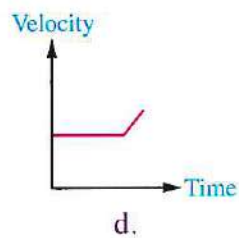
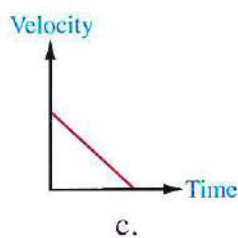
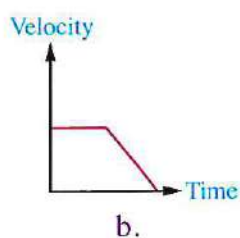
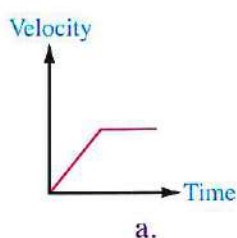
Fig (1) 1. Type of sight defect is 2. Sight defect is corrected using	Fig (2) 3. This phenomenon is called 4. It takes place between the two inner of each tetrad.
---	--

C Calculate the time required for changing the speed of a moving object from 15 m/s to 25 m/s when the object moves in uniform acceleration its value is 2 m/s^2 .

Question **4**

A Choose the correct answer :

- The angle of reflection of a light ray falls perpendicular on the reflecting surface equal to
a. zero°. b. 45° c. 90° d. 180°
- Each one of the two chromatids groups migrates towards the cell's poles in
a. prophase. b. metaphase. c. anaphase. d. telophase.
- An object was put at 20 cm from a plane mirror, the distance between the object and its image is cm.
a. 10 b. 20 c. 30 d. 40
- The graph that represents the movement of an object moves at a constant speed then negative acceleration is



B Correct the underlined in the following sentences :

- The number of chromosomes which found in the sperm is double the number of chromosomes in the ovum of the same species.
- The value of displacement is the length of the shortest curved line between two positions.
- Laplace is the scientist who established the crossing star theory for explanation the evolution of the solar system.
- When a body moves at regular speed it covers equal distances at unequal periods of time.

C Show by drawing the image formed when an object is placed at distance of 10 cm from concave mirror its focal length is 4 cm, mention the properties of the formed image.

2

Giza Governorate

Answer the following questions :

Question **1**

A Complete the following sentences :

- galaxy contains the Sun star and the solar system.
- The cell prepares to enter the stages of meiotic division in the phase which is called



- A car moves at a speed 70 km/h, so its speed relative to an observer moves in the opposite direction by a speed 50 km/h is
- The incident light ray which falls parallel to the principal axis of the concave mirror, reflects

B Put (✓) or (✗) :

- The chromosome chemically consists of nuclear acid called RNA and protein. ()
- The formed image by a plane mirror is always real image. ()
- The speed of a moving object increases when the time it takes to travel the same distance decreases. ()
- One of the causes of short-sightedness is an increase in the diameter of the eyeball. ()

C When is the acceleration is a positive acceleration ?

Question 2

A Choose the correct answer :

- Laplace scientist assuming the origin of the solar system is the
a. nebula. b. crossing star. c. Sun star. d. jupiter.
- To determine the length we must know
a. magnitude and direction.
b. the measuring unit.
c. magnitude and the measuring unit.
d. magnitude, direction and the measuring unit.
- Starfish arms could be regenerated and give a new complete animal if they contain a part of the
a. bud. b. zygote. c. spores. d. central disc.
- If an object moved and covered distance of 50 metre in a straight line in a certain direction, then the magnitude of the displacement is equal
a. zero. b. 20 m. c. 50 m. d. 80 m.

B Write the scientific term of each of the following statements :

- The uniform speed by which the moving object moves to cover the same distance at the same period of time.
- The phenomenon which contributes in genes exchanging between the two homologous chromosome's chromatids and distributing them randomly in the gametes.
- The point that lies in the middle of the reflecting surface of the spherical mirror.
- The product of the multiplication of the speed of the object by time.

C Give reason for :

The focal length of a spherical mirror can be determined by knowing its radius of curvature.

Question **3**

A Correct the underlined words in the following sentences :

1. If an object is placed at a distance less than focal length of a concave mirror, then the formed image is located between the focus and the center of curvature.
2. The gravitational force of the Earth controls of the orbits of the planets around it.
3. If the number of chromosomes in a somatic cell is (2N), then its number in a reproductive cell of the same species is (N).
4. The concept of motion is linked to stability of an object's position as time passes.

B Study the following figures and graphs, then answer :

Fig. (1)	Fig (2)	Fig. (3)
1. An object is moved according to this graph, find the distance covered after (5) seconds.	2. The figure represents one of the phases of cell division, what is the name of this phase ?	3. Draw the figure in your answer paper, then determine the path of the rays. 4. Mention the properties of the formed image.

C Mention the type of asexual reproduction in each of the following :

Amoeba – Sponge.

Question **4**

A Choose from column (B) what suits it in column (A) :

(A)	(B)
1. Velocity	a. are used instead of the glasses.
2. Sexual reproduction	b. the wide and extended space that contains galaxies, stars, planets and living organisms.
3. Contact lenses	c. is the scalar speed, but in a certain direction.
4. The universe	d. depends on two main processes, gametes formation and fertilization.

B Find the odd word in each of the following statements :

1. Acceleration – Mass – Displacement – Force.
2. The person see the far objects clearly – The image is formed behind the eye retina – The image is formed in front of the eye retina – Treated by using convex lenses.
3. Reproduction by using leaves – Reproduction by using roots – Reproduction by using stems – Reproduction by using seeds.
4. The properties of the formed image by a convex mirror : Virtual – Upright – Inverted – Diminished.

C A car moved from rest, its speed increased to 30 m/s in 10 seconds, calculate the acceleration of this car.

3 Alex. Governorate

Answer the following questions :

Question 1

A Choose the correct answer :

1. The Sun takes about 220 million years to complete one rotation around the
a. Earth. b. centre of galaxy. c. planets. d. Mars.
2. In the first meiosis, the cell divides to form cells.
a. two b. four c. six d. eight
3. The two factors necessary to describe the motion are
a. area and time. b. mass and time. c. distance and time. d. force and time.
4. The image formed by a concave lens is always
a. real, diminished and inverted. b. real, diminished and upright.
c. virtual, enlarged and inverted. d. virtual, diminished and upright.

B Cross out the odd word in each statement from the following statements :

1. Yeast fungus – Hydra – Mushroom fungus – Sponges.
2. Used in the solar ovens – Used in manufacturing of telescopes – Used in the car parking – Used in medical glasses industry.
3. The acceleration – The length – The force – The displacement.
4. Sperm cell – Liver cell – Muscle cell – Skin cell.

C Complete the following statement from between brackets :

The length of the shortest straight line between two positions, represents
(The displacement – The speed)

Question **2**

A Complete the following sentences :

1. When an objects covers equal in equal periods of time, then it moves at speed.
2. Before mitosis, the genetic material duplicates in a phase which is called
3. The distance between the focus of the concave mirror and its pole is called

B Put (✓) or (✗) in front of the following sentences :

1. The uniform acceleration means that the speed of an object changes by unequal values through equal times. ()
2. Velocity is a vector physical quantity which is not necessary to determine it identifying its magnitude and direction. ()
3. Asexual reproduction occurs in the unicellular organisms only. ()
4. The incident light ray passes through the focus exits from the lens parallel to the principal axis. ()

C An object is put at a distance of 3 cm from the optical centre of a lens, the formed image was upright, virtual and magnified.

1. Mention the type of the used lens.
2. Show by drawing the path of rays that form this image.

Question **3**

A Write down the scientific term for each of the following statements :

1. A glowing gaseous sphere revolves around itself to form the solar system.
2. A point inside the lens that lies on the principal axis in the mid distance between its faces.
3. Physical quantities, it is enough to identify them knowing their magnitude only.
4. A type of reproduction which is considered as a source of genetic variation from the parents to the their offspring.

B Mention one example for the following :

1. It always forms a virtual, upright and equal image to the object.
2. It is used to identify the speed of cars.
3. An animal has the ability to compensate its missing parts to give a complete animal.
4. It takes place as a result of increasing in the eyeball diameter, causes the retina to be far from the eye lens.

C Mention the importance of The vegetative reproduction in plants.

Question 4

A Correct the underlined words :

1. In mitosis, the nucleolus and the nuclear membrane disappear at the end of anaphase.
2. The solar system is located in one of the oval arms of the Milky Way galaxy.
3. The total distance which is covered by a moving object divided by the total time is known as the displacement.
4. If the angle of incidence equals 20° , then the angle between the reflecting surface and the reflected light ray equals 20° .

B Choose from column (B) what suits it in column (A) :

(A)	(B)
1. Convex mirror	a. is the ray that bounces off from the reflecting surface.
2. The motion	b. carry the genetic information of the living organisms.
3. The nuclear acid	c. its reflecting surface is a part of the inner surface of the sphere.
4. The reflected ray	d. is the change of an object position through a period of time.
	e. its reflecting surface is a part of the outer surface of the sphere.

C If the relative speed of a car equals 60 km/h relative to an observer in another car moves in the same direction with a speed of 40 km/h. Calculate the actual speed for the car.

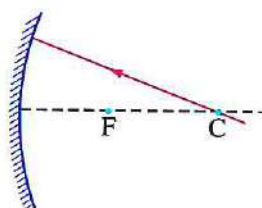
4 Qalyoubia Governorate

Answer the following questions :

Question 1

A Choose the correct answer in each of the following :

1. An object moves with a uniform speed of 7.2 km/h, so its speed equals m/s.
 - a. 1
 - b. 3.6
 - c. 2
 - d. 4
2. In the opposite figure : the angle of reflection of the light ray = °
 - a. 90
 - b. 45
 - c. 30
 - d. zero
3. The two factors, which can be used to describe the motion of a body are
 - a. distance and a time.
 - b. speed and time.
 - c. area and time.
 - d. distance and speed.



Part 3

4. The optical piece which forms a reversed, equal image for an object is

- a. convex mirror.
- b. concave mirror.
- c. plane mirror.
- d. convex lens.

B First : Put (✓) or (✗) in front of the following sentences :

- 1. The starfish reproduces sexually by binary fission. ()
- 2. The radius of curvature of mirror equals half of its focal length. ()

Second : Rearrange each of the following sentences :

- 1. An object at the center of curvature – An object very far (infinity) – An object between the focus (F) and the centre of curvature (C) – An object at a distance greater than double of focal length.

(descending order according to the length of formed image by concave mirror).

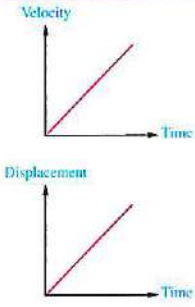
- 2. Anaphase (1) – Prophase (1) – Telophase (1) – Metaphase (1).

(according to priority of occurrence in first meiotic division).

C Calculate the relative speed for a car which moves with speed 80 km/h relative to an observer moves with speed 70 km/h in the opposite direction.

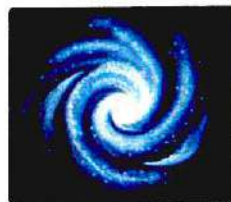
Question 2

A Choose from column (B) what suits it (suitable) in column (A) :

(A)		(B)
1. The reproduction in hydra takes place (occurs)		a. by budding.
2. The opposite graphical relation represents an object moves with		b. interphase.
3. The chromatin reticulum condenses in		c. uniform velocity.
4. The opposite graphical relation represents an object moves with		d. by spores.
		e. prophase.
		f. non-uniform velocity.

B First : The opposite figure represents the galaxy to which our solar system belongs to.

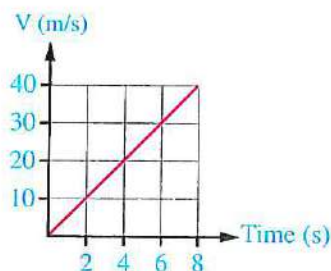
- 1. What is the name of this galaxy ?
- 2. To which kind of galaxies does this galaxy belong ?



Second : Compare between the real focus and the virtual focus, in lenses.

(according to method of formation)

- C** The opposite graph represents the relation between (Velocity – Time) for the movement of an object, **Find the acceleration by which this object moves.**



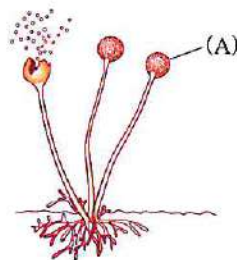
Question 3

- A** **Correct the underlined words :**

1. The periodic motion is the simplest type of the transitional motion.
2. The chromosomes are rounded bodies.
3. If an object moved in a circular path of radius (r) to cover a distance = (πr) , so its displacement equals $(2\pi r)$.
4. The treatment of cancer by using nano-molecules of gold is considered an application for genetic engineering in a medical field.

- B** **First : Study the opposite figure, then answer :**

1. What is the name of the part which is indicated by letter (A) ?
2. Determine the type of cell division (meiosis – mitosis) which these part use at growing.



Second : When do the following values equal zero ?

1. The initial velocity for a movement object.
 2. The value of the acceleration by which the object moves.
- C** An object of length 5 cm is placed at a distance = 20 cm from a convex lens its focal length = 10 cm, calculate the length of the formed image then calculate the distance between this image and the lens.

Question 4

- A** **Complete the following spaces by using the words between brackets :**

(Displacement of the object – $\frac{3}{1}$ – zero – Nebula – The time of journey – gaseous cloud – $\frac{1}{3}$ – real speed)

1. is considered from scalar physical quantities.
2. According to Big Bang theory the ratio of helium to hydrogen is
3. According to Laplace theory, the solar system was glowing gaseous sphere which is called
4. An observer and object are moving in the same direction, with the same speed, so the relative speed of the object relative to the observer equals

B First : Write the scientific term for each of the following sentences :

1. The point inside the lens that lies on the principal axis in the mid-distance between its two spherical faces.
2. Asexual reproduction that takes place (occurs) by different organs in plants without need of seeds.

Second : Mention (write) one importance of each of the following :

1. Convex mirror.
2. Zygote.

C An object is placed at the middle distance between plane mirror and convex lens of focal length = (10 cm) and if the distance between the formed image in the plane mirror and the position of the object = 30 cm. Mention the properties of the formed image by the convex lens.

5 Menofia Governorate

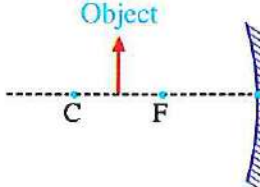
Answer the following questions :

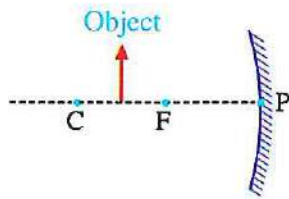
Question 1

A Complete the following sentences :

1. The origin of solar system according to crossing star theory is
2. is a vision defect which causes due to increase in the focal length of eye lens.
3. The moving object takes half time to cover the double distance, so its speed equals of its origin speed.
4. Number of the cells results from first meiotic division the number of the cells results from mitotic division.

B Choose the correct answer :

- When the object moves with acceleration equals zero, it means that the initial speed of object
 - more than final speed.
 - less than final speed.
 - equal final speed.
 - equal zero.
 - From the opposite figure, the properties of formed image are
 - virtual and diminished.
 - real and magnified.
 - virtual and magnified.
 - real and diminished.
 - Reproduction by budding occurs in
 - mushroom fungus.
 - yeast fungus.
 - bread mould fungus.
 - starfish.
- 

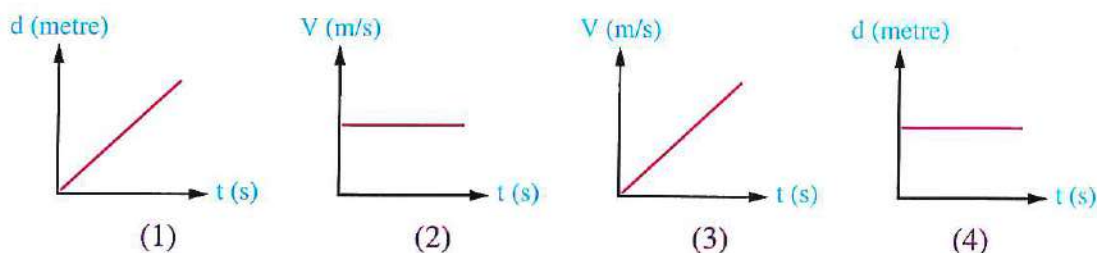




4. On putting an object at a distance 9 cm from optical centre of a convex lens it forms real, inverted and magnified image and when moving it 2 cm away from first position from the lens real, inverted and diminished image was formed, so the expected focal length of this lens equals

a. 12 cm. b. 10 cm. c. 9 cm. d. 5 cm.

C Which of the following graphs represents a body at rest ?



Question 2

A Write which of each the following sentences indicate :

1. Fusion of a male gamete and a female gamete to form zygote.
2. Glowing of a star for a short time to become one of the most shining stars in the sky, then its glowing disappears gradually to return to as it was.
3. Type of speed of car which covered distance 5 m through time 5 second, then covered distance 10 m in the same time during its motion.
4. The state of an observer when the relative speed of a moving car equals to its actual speed.

B Correct the underlined words :

1. On putting an object at a distance 5 cm from convex lens its focal length is 25 cm, a virtual and diminished image was formed.
2. An object moves in circular path its radius 14 m and covered three complete circles, the displacement of object equals 280 m.
3. Gametes in living organisms formed from special cells known as somatic cells.
4. The force is scalar physical quantity and its measuring unit is Newton.

C An object is placed at the distance (40 cm) from spherical mirror its focal length (20 cm), an equal image was formed to the object, and when the mirror was moved toward the object (10 cm), another image was formed. What is the properties of new image ?

Question 3

A Put (✓) or (✗) in front of the following sentences :

1. Distance equals displacement when object moves in straight line and return back to mid-distance. ()
2. Big Bang theory based on existence something that looks like clouds in the space. ()

Part 3

3. The formed image on the mirror at the left side of car driver is upright and diminished. ()
4. Nuclear membrane is formed at two poles of the cell during anaphase 1 of the first meiotic division. ()

B Write the number which indicates each of the following :

1. Angle of reflection when the light ray falls perpendicular on the reflecting surface of a plane mirror. ()
2. Speed of body covered (300 m) through half minute. ()
3. Number of chromatids which shares in each tetrad and exchange their parts to produce genetic variation during first meiotic division. ()
4. Value of diameter of curvature of convex lens which forms an equal image of object at a distance (20 cm) from its optical center. ()

C What is the number of individuals which results from three sequences binary fission in Euglena ?

Question 4

A Choose from column (B) what suits it in column (A) :

(A)	(B)
1. Solar system	a. amount of displacement in one second.
2. 23 pairs of chromosomes	b. formed from 46 chromatids.
3. Velocity	c. located in one of the spiral arms of Milky Way galaxy.
4. Concave mirror	d. amount of distance which covered in one second.
	e. formed from 92 chromatids.
	f. used in solar oven.

B Complete the following sentences with suit words from between brackets :

(equal to – double – half)

1. Speed of car equal 90 km/h speed of train equal 50 m/s.
2. Radius of curvature of spherical mirror its focal length.
3. Number of chromosomes in a reproductive cell is number of chromosomes in a somatic cell.
4. Distance between the object and the surface of a plane mirror distance between the same object and its formed image.

C An object moves in straight line with speed (5 m/s) for distance (50 m), then moves in the same direction distance (160 m) through time (20 seconds). Calculate the amount of average speed of object which object covered from the start to the end of motion.

6 Dakahlia Governorate

Answer the following questions :

Question 1

A Complete the following sentences :

1. The velocity and the displacement are similar in , and they are different in
2. The point in the mid-distance between two spherical faces of a lens is called and the point that in the middle of the reflecting surface of a spherical mirror is called
3. In a skin cell of a rabbit, the spindle fibers are formed by during
4. The acceleration of a moving body is vanished when its speed equals its speed.

B Write the scientific term :

1. A glowing gaseous sphere revolving around itself that formed the solar system, according to Laplace assumptions. (.....)
2. An optical piece that is used to treat a vision defect, which causes due to the formation of image in front of the retina. (.....)
3. The regular speed by which the object moves to cover the same distance at the same period of time. (.....)
4. A process in which some parts of the two inner chromatids of each tetrad are exchanged. (.....)

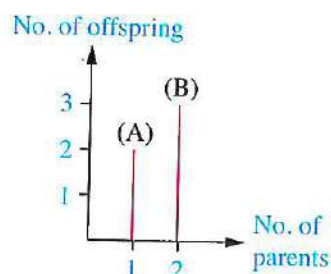
C The opposite figure represents the relation between number of parents and number of offspring in two cases of reproduction :

1. What is the type reproduction in each case ?

(A) :

(B) :

2. What is the relation between the genetic structures of each offspring and their parent(s) in the two cases (A) and (B) ?



Question 2

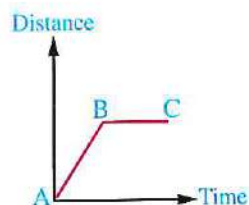
A Choose the correct answer :

1. Euglena reproduces by
 a. regeneration. b. budding. c. binary fission. d. sporogony.

Part 3

2. In the opposite figure, acceleration of the object in the period (AB) equals the value of in (BC) period.

a. its acceleration b. its displacement
c. its speed d. its distance



3. If an object of 8 cm length is put in front of a spherical mirror that has an inner reflecting surface and its focal length is 40 cm, an inverted image its length 16 cm is formed, so the distance between the object and the mirror may be
- a. 40 cm. b. 60 cm. c. 80 cm. d. 100 cm.
4. A car moved by speed 75 km/h and it is observed by traffic policeman as this car moves with speed 35 m/sec, so the speed of traffic policeman equals km/h.
- a. 110 b. 35 c. 51 d. 40

B Correct the underline word :

1. Asexual reproduction depends on reduction cell division.
2. When an object is placed at the focus of a convex lens, diminished, erect image is formed.
3. A body moves on the circumference of a circle its radius = r and covers πr distance, so its displacement equals $2\pi r$.
4. Pollination is the combination of a female gamete and a male gamete to form a zygote.

C If the driver used the brakes of a moving car its speed decreases by rate 3 m/sec each one sec. until it stops after 5 seconds, calculate its speed before the driver press the brakes.

Question 3

A An object is placed at distance 10 cm from the optical centre of the lens, then a diminished, inverted image for the object is formed. And when the object is moved 4 cm toward the lens, an inverted and equal image is formed.

1. What is the type of the lens ?
2. Calculate the focal length of the lens.
3. Draw a diagram showing the path of rays of object's image in the second case.

B Circle the odd word and write the scientific term of the rest words :

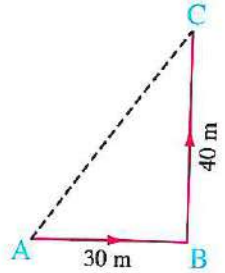
1. Virtual – Inverted – Upright – Equal to the object.
2. The testis – The ovary – The ovum – The anther.
3. Object its mass 95 kg – Its length 175 cm – 300 N force affected on it to forward – It covers distance 25 metre.
4. Moulton scientist – Laplace scientist – Crossing star theory – Chamberlain scientist.



- C** In the opposite figure a body moves from point (A) to point (C) passing by point (B) and returns to point (A) in the same path in time 35 sec, Calculate :

1. The average speed.

2. The velocity.



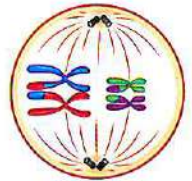
Question 4

- A** Write the number which indicates each of the following :

1. Diameter of curvature of a convex mirror its focal length 5 cm.
2. Percentage of helium gas in the universe within minutes after the Big Bang.
3. Number of cells that produced from (4) successive mitosis of a skin cell.
4. Time that is needed for the Sun to make one rotation around the centre of galaxy.

- B** The opposite figure represents a cell during division, answer the following questions :

1. What is the name of this phase ?
2. What happen in the phase that follows it ?
3. What is the type of the cell division ?
4. What is the importance of this type of division ?



- C** Give reason :

1. The lens has two foci, while the spherical mirror has one focus.
2. The car cannot move by uniform speed practically.

7 Sharkia Governorate

Answer the following questions :

Question 1

- A** Write the scientific term :

1. The regular speed by which the object moves to cover equal distances at the same period of time.
2. An optical piece that forms a reversed image of the object.
3. The type of cell division that takes place in plants to reproduce by using plants organs such as the root, stem, or leaves without using seeds.
4. The continuous separating between galaxies in the universe as a result of their regular movement.

- B** Choose the correct answer :

1. Algae reproduce asexually by
 - a. regeneration and spore propagation.
 - b. budding and binary fission.
 - c. spore propagation and binary fission.
 - d. budding and regeneration.

Part 3

2. If an object is placed at the center of curvature of a convex mirror
 - a. a real image is formed.
 - b. a diminished image is formed.
 - c. an equal image is formed.
 - d. no image is formed.
3. From the scalar physical quantities
 - a. radius and area.
 - b. time and force.
 - c. acceleration and speed.
 - d. mass and displacement.
4. A spherical mirror forms a real image with a length of 5 cm for an object with a length of 15 cm is placed at a distance 20 cm from its pole. The possible focal length of this mirror is cm.
 - a. 15
 - b. 8
 - c. 12
 - d. 10

- C** A car was moving at a speed of 5 m/s, after one second its speed became 10 m/s, after another second its speed increased by 15 m/s, and after applying the brakes, its speed became 10 m/s during the third second, and in the fourth second its speed remained 10 m/s. Then used the brakes to stop the car completely at the fifth second.

Explain : The movement of the car graphically only.

Question 2

- A** Complete the following sentences :

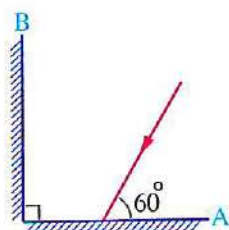
1. The change in displacement per one second is , while change in velocity per one second is
2. The origin of the solar system in the opinion of Chamberlain and Moulton is , while according to Laplace's theory is
3. The male gametes in humans are , while in flowering plants are
4. If a car moves at a speed of 72 km/h, this means that it covers a distance in a second, and a distance in 50 seconds.

- B** Correct the underlined words in the following statements :

1. The graphical relation (acceleration – time) of an object moves at a uniform speed, is graphically represented by a straight line parallel to the time axis.
2. When a moving body takes 2 seconds to reach its final speed to three times its initial speed, the acceleration of its motion is half the amount of its initial speed.
3. The focal length of a thin convex lens is equal to the focal length of a thick convex lens.
4. When a somatic cell divides 3 times consecutively, 6 cells are produced that contain the same genetic material as the original cell.

- C** In the opposite figure : Trace the path of the light ray falling on mirror A and reflecting from it to fall on mirror B.

Explain your answer with a drawing and determine the angle of incidence and reflection values on the drawing.





Question 3

A Extract the odd word or phrase, then write what links the rest of the words :

1. Occurrence of the crossing over phenomenon – Condensation of the chromatin reticulum and appearance of chromosomes in homologous pairs – Splitting of the centromere – Disappearance of the nucleolus and nuclear membrane – Formation of spindle fibers.
2. Upright – Results from the intersection of rays extensions – It cannot be received on a screen – It is formed in front of a reflecting surface.
3. Mass – Force – Metre – Time – Acceleration.
4. Nebular theory – Big Bang theory – Crossing star theory – Modern theory.

B What happens in the following cases :

1. When a body moves in a straight line. (related to the speed and velocity).
2. The irregular of eyeball.
3. A light ray falls passing through the center of curvature of the mirror.
4. Putting the yeast fungus in a warm sugary solution.

C If the number of chromosomes in the nucleus of a plant stem cell is (6) pairs of chromosomes. Determine : The number of chromosomes in each of the following cell :

1. The nucleus of a pollen grain.
2. The nucleus of a zygote.

Question 4

A Put (✓) or (✗) and correct the wrong ones :

1. A plane mirror collects the light rays falling on it. ()
2. Many old stars gather in the center of the Milky Way galaxy. ()
3. Asexual reproduction occurs in unicellular organisms only. ()
4. If two objects move in the same direction from one point, the first at a speed of 20 m/s and the second at a speed of 15 m/s, the distance between them after 40 seconds becomes 300 metres. ()

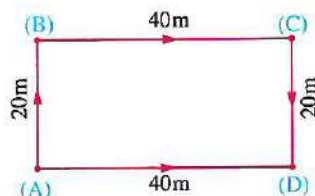
B Choose the correct answer :

1. A body moves with an initial speed of 5 m/s with uniform acceleration, according to the relationship $a = 10/t$, the final speed of the body is m/s.
a. 0 b. 15 c. 10 d. 5
2. An object is put at a distance of 8 metres from a plane mirror, and it forms an image (Y_1). If the mirror moves a distance of 2 metres away from the object, it forms a new image (Y_2), then the distance between (Y_1) and (Y_2) becomes metre.
a. 16 b. 8 c. 4 d. 2

Part 3

- If an object is placed at a distance less than the focal length of a convex lens, a (an) image is formed of it.
 - real, magnified
 - virtual, magnified
 - real, diminished
 - at infinity
- Two cells divided, one in the stomach of a human female and the other in her ovary. The ratio between the number of cells resulting from the division of each of them is respectively.
 - 2 : 1
 - 1 : 4
 - 1 : 2
 - 4 : 1

C In the opposite figure : Two cars move from point A at the same time to reach point D. The first car crossed the track (ABCD) in a time of 40 seconds. The second car crossed the track AD at a speed of 20 m/s.



- Which of the two cars reaches point D first ? And why ?
- Calculate the velocity of the first car.

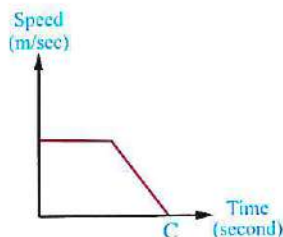
8 Gharbia Governorate

Answer the following questions :

Question 1

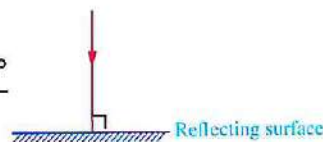
A Write the scientific term :

- A theory that explains the origin of the universe from explosion of a very small gaseous ball of high pressure and high temperature.
- The straight line that passes by the centre of curvature of the mirror and any point on its reflecting surface except the pole of the mirror.
- A phase where some processes occur upon which the formation of a complete set of chromosomes that have the same number of the parent cell's chromosomes.
- From the opposite graphical figure :
The state of the body that is represented by point (c).



B Correct the underlined words :

- If a light ray falls on a smooth (plane) mirror as shown in the opposite figure, it reflects by an angle of reflection equals 180°
- The number of chromosomes in a plant stem cell equals quarter its number in a pollen grain.
- A concave lens is put at the left side and right side of the car driver.
- When a body moves a distance of 70 m northward then returned 40 m southward, so its displacement is 110 m northward.

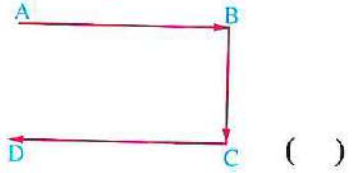


C What happens in the following cases ...?

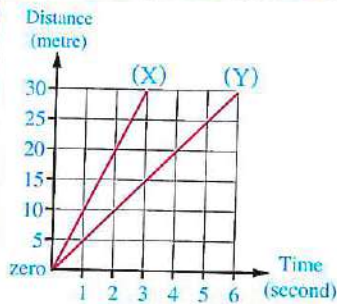
1. The direction of movement of plane is in the opposite direction of the wind. (according to the time of the trip and amount of consumed fuel).
2. An object moves at a regular speed. (According to its acceleration).

Question 2

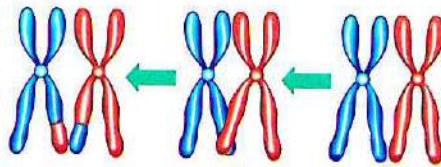
A Put (✓) in front of the right statement and (✗) in front of the wrong one :

1. The displacement of the body that starts its motion from point (A) directed as shown in the opposite figure, equals the value of the distance (AB).  ()
2. The gravity of Earth keeps the rotation of the planets in fixed orbits around the Sun. ()
3. A bud emerges as a lateral bulge in yeast fungus then the cell nucleus divides mitotically into two nuclei, one of them remains in the parental cell and the other one migrates to the bud. ()
4. When the body moves in the same direction of movement of observer with the same speed, the relative speed will be more than the real speed. ()

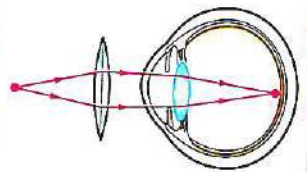
B Study the following figures then answer the questions below each figure :



1. The previous graph represents the (distance – time) graph of the movement of two bodies (X) and (Y) :
 - (a) What is the kind of speed of the two bodies ?
 - (b) Calculate the ratio between the speed of body (X) and speed of body (Y).



2. The previous figure represents a vital phenomenon, Complete the following :
 - (a) This phenomenon is called
 - (b) This phenomenon occurs in the



3. The previous figure represents correction of a vision defect :
 - (a) The vision defect is
 - (b) Where was the image formed before correction ?

Part 3

C Compare between the following :

1. Thick convex lens and thin convex lens (according to : focal length).
2. The formed image for a body that is placed at a distance of 10 cm in front of each of a plane mirror and a concave mirror that has a focal length of 5 cm.

Question 3

A Complete the following sentences :

1. From the opposite figure : the properties of the image that appears to the dentist in the mirror that he uses are
2. In the universe, groups of are gathered to form galaxies.
3. An object starts its motion from rest till its acceleration reaches 2 m/sec^2 . After 2 sec, the final speed by which it moves equals m/sec.
4. In the opposite figure, asexual reproduction in this living organism takes place by

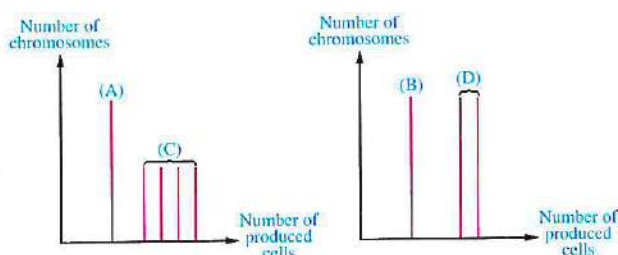


B Study the following figures then answer the questions below each figure :

1. - Copy the previous figure in your answer paper then complete the direction of the rays which form the image of the object. - Then mention the properties of the formed image.	2. From the previous graph : - The average speed by which this body moves equals m/sec.	3. From the previous figure : - What is the name of this living organisms ? - What is the type of reproduction that takes place in it ?
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C The opposite two graphical figures represents the ratio between the number of the original cells (A) and (B) and the number of the produced cells from their division (C) and (D) :

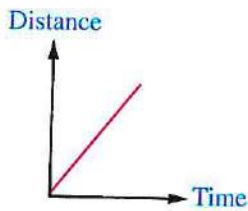
1. What is the type of cell division that happens in each of cells (A) and (B) ?
2. If the number of chromosomes in each of cells (A) and (B) is 24 chromosomes, What is the number of chromosomes in each of cells (C) and (D) ?



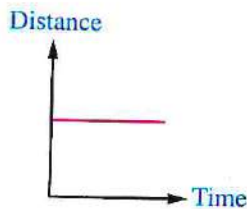
Question 4

A Choose the correct answer in each of the following :

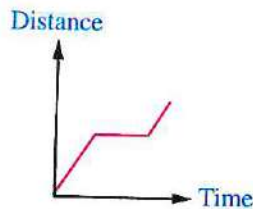
- The cancer cells can be detected by using of technological nano-molecules of metal.
a. tin b. gold c. iron d. nickel
- The earliest life forms began to appear on the Earth
a. after formation of solar system. b. before formation of galaxies.
c. after appearing of dinosaurs. d. after appearing birds and mammals.
- A car driver stopped in the road to eat his food in a rest then he completes his trip, the graphical figure that indicates this case is



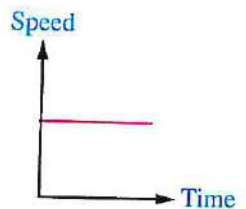
a.



b.



c.



d.

- A doctor advised a person who has a sight defect to use glasses with concave lenses, it means that this person suffers from
a. disability of seeing near objects clearly.
b. a decrease in the convexity of the eye lens surface.
c. a decrease in the eyeball diameter.
d. an increase in the convexity of the eye lens surface.

B Choose the odd word (or statement) out and then write what the rest words (or statements) have in common :

- Mass – Length – Force – Time.
- Formed as a result of the intersection of the extensions of the rays – Cannot be received on screen – Upright (erect) – Formed in front of reflecting surface of mirror.
- Reproduction by part of stem – Reproduction by part of root – Reproduction by seeds – Reproduction by tissue culture.
- Made of glass – Can stick to the eye cornea – Very thin lens – Made of plastic.

C Calculate the average speed of the body that moves in a circular path whose length is 150 m, if it covers 10 successive rounds through 2.5 minutes.

Answer the following questions :

Question **1**

A Choose the correct answer :

- The theory that explained the origin of the universe is the theory.
a. nebular b. crossing star c. modern d. Big Bang
- From the scalar physical quantities ,
a. mass – acceleration. b. displacement – time.
c. distance – radius. d. force – distance.
- If an object its length 8 cm is placed at a distance 10 cm from a convex mirror its focal length is 5 cm, the length of formed image is cm.
a. 10 b. 5 c. 16 d. 8
- The ratio between the number of chromosomes in a skin cell of an animal to the number of chromosomes in a cell of its ovary
a. (1 : 2) b. (2 : 1) c. (1 : 1) d. (1 : 4)

B Write the scientific term :

- The regular speed by which the object moves to cover the same distance at the same period of time.
- A vision defect leads to the formation of image in front of the retina.
- A type of asexual reproduction in which the parent disappears.
- The part which responsible for pulling of chromosomes toward the poles of the cell in anaphase.

C In a clock, if the length of the hand of seconds is 7 cm, Calculate the time taken by the hand of seconds to cover a displacement equals 14 cm.

Question **2**

A Complete the following sentences :

- The scientists able to explain the origin of the universe, from the first second fraction of its evolution by the recent discoveries in the sciences of and
- If the distance covered by an object decrease to half and time decrease to half, then its speed
- The change in of mitosis are called reverse changes.
- A train its length is 150 m runs at 50 m/sec, the time it takes to pass in front of railway shunter equal

B Correct the underlined words :

- The focal length of thin convex lens equal the focal length of thick convex lens.
- The crossing over phenomenon occurs in first metaphase.



- The car moves in the opposite direction of the observer and with the same speed, the relative speed equals half the real speed.
- The reproduction by spores is more popular in bacteria and algae.

C An object was placed at distance of 5 cm from the optical center of the convex lens, and no image was formed :

Draw the paths of the rays, and mention the properties of formed image when the object moves 3 cm away from the lens.

Question 3

A Put (✓) or (✗) :

- If a light ray falls passing through the optical centre of the lens, it refracts parallel to the principal axis. ()
- The vegetative reproduction is a source of genetic variation in the plant. ()
- The graphical representation (distance – time) for regular constant speed represented by straight line passing through the origin point. ()
- In solar oven, a concave mirror is used to diverge light rays and generate extreme heat. ()

B Study the following figure then answer :

1. Velocity of an object equals =	2. The figure shows the of the mitosis division.
3. The angle between incident light ray and the reflected light ray =	4. If the object moves from (1) to (2), the size of formed image will be (smaller than – bigger than – equal to) the size of object.

C Someone had an accident, got broken shoulder bone and damaged the spinal cord :

- What would you expect after a long period of treatment for both injuries ?
- Give reasons for your answer.

Question 4

A Mention the number which indicates each of the following :

1. The ratio between distance and displacement which covered a distance x in eastward direction and return back a distance $2x$ in west direction.
2. The number of cells produced by a skin cell dividing three successive divisions.
3. The focal length of spherical mirror its diameter 20 cm.
4. The number of stars in the solar system.

B Choose from column (B) what suits it in column (A) :

(A)	(B)
1. Nucleic acid	a. no image is formed.
2. Principal axis of mirror	b. displacement.
3. The shortest line between starting point and final point	c. carry genetic traits for the living organism.
4. The object placed at the focus of concave mirror	d. the line passes through center of curvature and its pole.
	e. the virtual and minimized image is formed.

C A car moves at uniform speed 20 m/sec. in 10 sec., then the driver pressed the brakes and their speed decreased by 2m/sec^2 , calculate :

1. The distance covered by the car in the first 10 sec.
2. The speed of the car after 3 sec from using the brakes.

10 Kafr El-Sheikh Governorate

Answer the following questions :

Question 1

A Choose the correct answer :

1. The ratio between final speed and initial speed of an object moves by positive acceleration equals
a. zero. b. one. c. more than one. d. less than one.
2. A body of 10 cm length is placed at the centre of curvature of concave lens, so that the image length equals cm.
a. 5 b. 10 c. 12 d. 20
3. The optical piece that forms an equal virtual image for the object is
a. convex mirror. b. plane mirror. c. convex lens. d. concave lens.
4. The ratio between the velocity of a body moved with a speed 72 Km/h and the velocity of a body moved by a speed of 20 m/sec. is
a. 3.62 b. 1 c. 0.28 d. 2



B Correct the underlined words :

1. Nucleolus and nuclear membrane disappear at the end of anaphase of the mitotic cell division.
2. When the angle between the incident light ray and reflected light ray equals 40° , so the angle of incidence equal 40° .
3. When the human body cell divides, the spindle fibres arise from condensation of the cytoplasm at the two poles of the cell.
4. An equal image for an object is formed at distance of 10 cm from a concave mirror its diameter is 5 cm.

C Choose the correct answer :

A body on a bike covers 300 metres in a minute and 420 metres in the next minute So, the average speed =

- a. 300 m/s. b. 6 m/s. c. 210 m/s. d. 360 m/s.

Question 2

A Complete the following sentences :

1. When the body is moving at uniform speed, the acceleration equals
2. An object moved 16 metres towards the east and then returned to the starting point, so its displacement equals
3. The bread mould fungus reproduces by
4. In flowering plants, meiosis occurs in anther to form (as a male gamete).

B Write (True) or (false) in front of the following statements :

1. Vegetative reproduction is a source of genetic variation in plants. ()
2. If a light ray passes through the optical centre of a convex lens, it passes parallel to the principal axis. ()
3. Increasing convexity of eye lens causes long-sightedness. ()
4. The universe emerged when atomic particles merged together producing helium and hydrogen gases. ()

- C Problem :** A car moves at a speed 50 m/sec. If the driver used the brakes to decrease the speed, so it decreases by 2 m/sec^2 . Calculate its speed after 12 seconds from using brakes.

Question 3

A Choose from column (B) what suits it in column (A) :

(A)	(B)
1. Examples of scalar physical quantity is	a. at which the genetic material duplicates.
2. Gametes	b. time.
3. Interphase	c. metre/sec ² .
4. Acceleration measurement unit is	d. it contains half the number of chromosomes in a somatic cell.

Part 3

B What happens when ...?

1. A reproductive cell divides meiotically in human male body.
2. A starfish loses one of its arms, while it contains a part of the central disc.
3. Two cars move with the same speed and in the same direction.
4. A plane flies against wind direction (according to time and consumed fuel).

C Mention the position of an object in front of a concave mirror if the formed image is :

1. Real, inverted and magnified.
2. Real, inverted and minimized.

Question 4

A Write the scientific term of each of the following statement :

1. A glowing gaseous sphere was revolving around itself, which assumed that it was the origin of the solar system.
2. The actual length of the path that a moving object covers from the starting point to the ending point.
3. The theory assumed that the solar system was originally a star rather than the Sun.
4. It represents the regular speed by which the object moves to cover the same distance at the same period of time.

B Cross out the odd word in each of the following :

1. Prophase – Reduction division – Metaphase – Anaphase.
2. Real – Virtual – Erect – Magnified.
3. Reproductive cells – Liver cells – Gametes cells – Skin cells.
4. The properties of image in the concave lens are : (Virtual – Magnified – Upright – Minimized).

C Show by drawing : the properties of an image of the object in front of a concave mirror, if you know that the length of image equals to the length of object.

11 Behira Governorate

Answer the following questions :

Question 1

A Write the scientific term of each of the following statement :

1. The distance moved through a unit time.
2. Type of lenses is used to correct a vision defect which results from decreasing the convexity of the eye lens surface.
3. The distance covered with light in one year.
4. Male cells in plant contains (N) chromosomes.

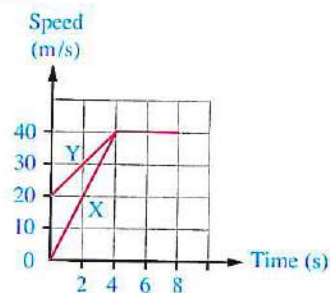
B When does each of the following occur :

1. The structure (X) disappears in the cell shown in front of you ?
2. No Image is formed for an object in front of a concave mirror ?
3. The magnitude of velocity is equals to speed of a moving object ?
4. The angle of incidence = the angle of reflection = zero ?



C Study the opposite figure then answer the following questions :

1. Which of the two objects starts its motion from rest ?
2. When does each of them start motion with a uniform speed ?
3. Which of the two objects moves with smallest acceleration at the beginning of its motion ?



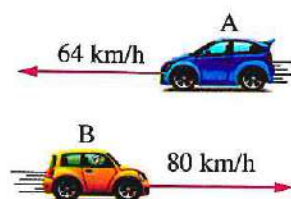
Question 2

A Choose the correct answer in each of the following :

1. The measuring unit of acceleration is
a. m.s b. $m.s^2$ c. m/s d. $m.s^{-2}$
2. Astronomers use to study the Sun.
a. Hubble telescope b. solar telescope c. optical microscope d. light year
3. Two moving objects (A and B) covered the same distance. If the speed of object (A) is double speed of object (B), so the time taken by object (B) is the time taken by the object (A).
a. equal to b. half c. double d. quarter
4. If you knew that a muscle cell in a female rabbit contains 22 pairs of chromosomes, then the number of chromosomes in the rabbit's ovum is chromosomes.
a. 11 b. 22 c. 44 d. 88

B Correct the underlined words :

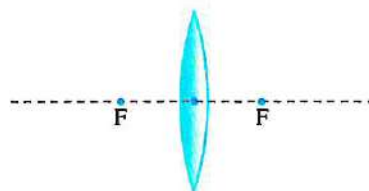
1. The sperm and the ovum share in zygote by a ratio of 1:2.
2. The uniform speed is a physical quantity that expresses the speed of an object increases by equal magnitudes in equal periods of time.
3. The ratio between the object's length to the image's length which formed by a concave mirror when the object is placed at a distance less than the focal length is equal to one.
4. The opposite figure represents two moving cars, the relative speed for an observer in car (A) is 10 m/s.



Part 3

C The opposite figure represents a convex lens with a focal length of 10 cm, if an object is placed in front of the lens at a distance of 15 cm from its optical center :

1. Transfer the drawing into the answer booklet, then draw the path of the light rays which forming the object image.
2. Mention the characteristics of the formed image ?



Question 3

A Complete the following statements :

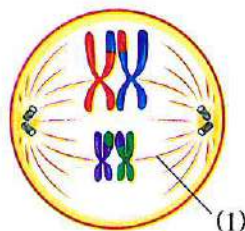
1. Force is considered a physical quantity, while mass is a physical quantity.
2. The universe consists of gaseous particles which are and
3. If the focal length of a convex mirror is 8 cm, then its radius of curvature is equal to
4. From the multicellular organisms that reproduce by budding are and

B Choose from column (B) what suits it in column (A) :

(A)	(B)
1. Bread mould fungus	a. forming a virtual, erect and diminished image.
2. Amount of displacement	b. it reproduces sexually by spores.
3. Convex mirror	c. forming a virtual, erect image and equal to object's size.
4. Plane Mirror	d. it is the length of the shortest straight line between two positions.
	e. it reproduces asexually by spores.

C Study the opposite figure then answer the following questions :

1. Mention the name of that phase, then indicate the type of this cell division.
2. What type of cells does this division occur ?
3. Explain how structure (1) is formed in the plant cell.

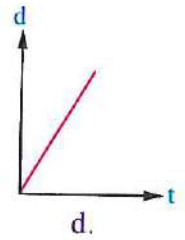
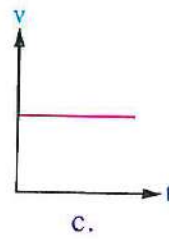
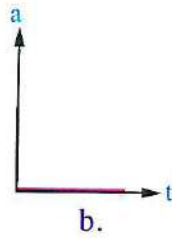
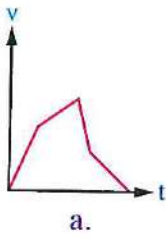


Question 4

A Choose the odd word then write the relation between the other words :

1. The Modern theory – The Nebular theory – The Big Bang theory – The crossing star theory.
2. Nerve cells – Skin cells – Stomach cells – Muscle cells.
3. Solar ovens – Magnifying the image of the human face – Placed to the left and right of the car's driver – Reflecting the emitted light from the front bulbs in cars.

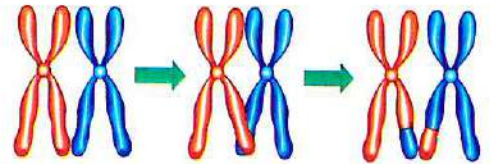
4.



B Choose from the following table what is suitable for each sentences :

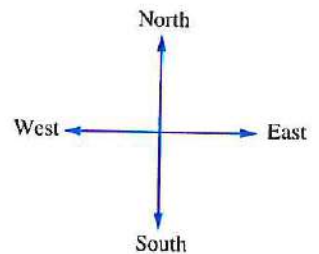
The first Metaphase	Convex mirror	4 metre	Concave lens
The first prophase	1.5 m/s	Crossing over phenomenon	1.5 metre
90 m/s	Budding	2.5 metre	Concave mirror

1. A person rides his bicycle 120 metres in the first minute, then 60 metres in the second minute, so his average speed during this trip is
2. An object is placed in front of a plane mirror at a distance of 1.5 metres from it, then it moves 0.5 metres away from its first position, so the distance between the object and its second image is
3. The phenomenon shown in the figure is called, it occurs at the end of the
4. A student makes an experiment to burn a piece of paper using sunlight, so is used.



C A car moved a distance of 40 metres towards the south through half a minute and then moved to the west a distance of 30 metres through 20 seconds.

1. Find the displacement.
2. Calculate its velocity in units of (m/s).



12 Ismailia Governorate

Answer the following questions :

Question 1

A Choose the correct answer :

1. When a body moves with zero acceleration, this means that
 - a. the speed of the body is uniform.
 - b. the speed of the body is non-uniform.
 - c. the speed of the body increases.
 - d. the speed of the body decreases.

Part 3

- The real image is always
a. enlarged. b. upright. c. inverted. d. small.
- Within minutes after of the Big Bang, the atomic particles merged together producing two gases, which are
a. hydrogen and nitrogen. b. oxygen and hydrogen.
c. nitrogen and helium. d. hydrogen and helium.
- Nano-molecule of metal are used to detect the infected cells with cancer.
a. zinc b. gold c. iron d. nickel

B Write the scientific term for each of the following sentences :

- A disease infects the eye lens making it opaque.
- The nucleic acid, which carries the genetic information for the living organism.
- The straight line that passing through the centre of curvature of the mirror and any point on its reflecting surface except its pole.
- The distance covered at a certain direction.

C Answer :

If a car moves at a speed of 80 km/h and it seems to an observer at a speed of 30 km/h, so the speed of the moving observer is km/h and in the direction.

Question 2

A Complete the following sentences with suitable words :

- The cells in the human body don't divide at all.
- The speed of a moving body increases when the time needed to cover a certain distance
- Galaxies are formed from groups of
- When the object position changes as time passes according to the position of another fixed object, we can say that the object is in a state of

B Correct the underlined words :

- The opposite figure no. (1) shows the metaphase in the cell division.
- The graph no. (2) represents a body moves at uniform speed.
- The speed of a car can be identified directly by using compass.
- The lens is transparent medium that reflects the light and is defined with two spherical surface.



Fig.(1)

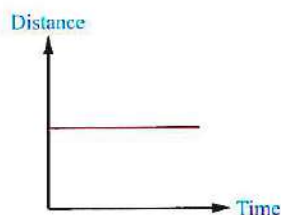
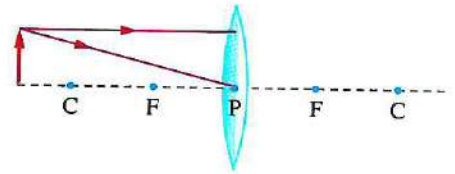


Fig.(2)



C Answer :

Redraw the opposite figure in your answer sheet, then complete the drawing and mention the properties of the image.



Question 3

A Mention the link or the relation between the following words or sentences :

1. The Sun – The Saturn – The Earth.
2. m/sec. – km/h. – m/min.
3. Reproduction by a part of the stem – Reproduction by a part of the root – Reproduction by tissue culture.
4. Increase in the eyeball diameter – Increase in the convexity of the eye lens surface – The rays collect in front of the eye retina.

B Study the following figure then answer :

1. In the figure, what does point (P) refers to ?	2. If an incident light ray falls as in the figure, so it reflects	3. In this organism, asexual reproduction takes place by	4. The distance that the moving object covers after 3 sec, from the beginning of the motion = metre.
--	---	---	---

C Give reasons : Interphase has an important role in cell division.

Question 4

A Compare between the following :

1. Mass and force. (according to the kind of the physical quantity).
2. The concave mirror and the convex mirror. (according to the position of the center of curvature).
3. Nebular theory and Big Bang theory. (concerning the aim of the theory).
4. The animal cell and the plant cell. (according to the way of formation of the spindle fibers).

B What are the results of ...?

1. A light ray falls perpendicular on a plane mirror surface.
2. An object is put at the focus of convex lens.

Part 3

- The direction of the plane motion is opposite to the direction of the wind.
(concerning the time of the flight and the amount of consumed fuel).
- At the end of prophase I parts of the two inner chromatids of each tetrad are exchanged.

C Answer :

An object moves with speed 10 m/sec, under the effect of uniform acceleration equals 2 m/sec^2 , Calculate the time taken by an object to become its speed 40 m/sec.

13

Suez Governorate

Answer the following questions :

Question 1

A Complete the following sentences :

- The measuring unit of acceleration is
- The radius of the concave mirror equals of its focal length.
- The scientist who established the nebular theory is
- Spindle fibers begin to shrink in the of mitosis.

B Put (✓) or (✗) in front of the following statements :

- The irregular speed is the speed by which the object moves when it covers equal distances at equal periods of time. ()
- The optical centre is a point inside the lens that lies on the principal axis. ()
- The virtual image can be received on a screen. ()
- The crossing over phenomenon plays an important role in the variation of genetic traits among the individuals of the same species. ()

C Choose the correct answer :

If the speed of a body increases regularly, its acceleration

- | | |
|-------------------------|-------------------------|
| a. increases regularly. | b. decreases regularly. |
| c. equals zero. | d. is regular. |

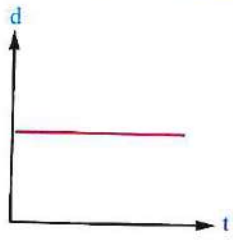
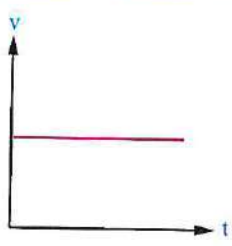
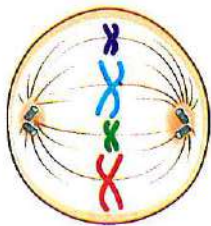
Question 2

A Correct the underlined words :

- The relative speed represents the regular speed by which the object moves to cover the same distance at the same period of time.
- The displacement is the change of an object's speed in one second.
- The two gases that produced galaxies, stars, and the universe over millions of years are hydrogen and oxygen.
- The budding is the ability of some animals to compensate their missing parts.



B Study the following figures, then complete the following sentences :

 1. The graph represents the state of an object at	 2. The graph represents the state of an object at	 3. The figure represents a lens	 4. In mitotic division, this phase is
--	--	--	--

C Give a reason for :

The object that is placed at the focus of a convex lens doesn't form an image.

Question 3

A Write the scientific term of each of the following statements :

1. The change of an object position as time passes according to a fixed position.
2. A vision defect results due to the decrease in the eyeball diameter.
3. A theory that explains the origin of the universe from a massive explosion since 15000 million years.
4. The most common type of reproduction especially in higher living organisms.

B Choose from column (B) what suits it in column (A) :

(A)	(B)
1. The nucleus of the cell	a. is always less than or equal to the displacement.
2. The force	b. contains the genetic material of living organisms.
3. The Milky Way	c. is always greater than or equal to displacement.
4. The distance	d. contains the Sun and solar system.
	e. is a vector quantity.

C What is the chemical structure of the chromosome ?

Question 4

A Choose the correct answer in each of the following :

1. is a scalar physical quantity.

a. Time	b. Negative acceleration
c. Displacement	d. Positive acceleration

Part 3

- The image of an object placed in front of a convex mirror is always the object.
a. greater than b. smaller than c. equal d. double
- The solar system is located in one of the arms of the Milky Way galaxy.
a. curved b. straight c. spiral d. spherical
- The changes that occur in the of mitotic division are called adverse changes.
a. interphase b. prophase c. telophase d. metaphase

B Put the following numbers in front of what suits them in the sentences below :

(1 – 2 – 4 – 5 – 6)

- The average speed of a body during two seconds if it moves at a uniform speed of **2 m/s**. (.....)
- The number of the principal axes of a convex lens. (.....)
- The length of an image for an object whose length is **5 cm** placed between the focus and the center of curvature of a concave mirror. (.....)
- The number of cells resulting in the final phase of the second meiotic division. (.....)

C In the opposite figure :

A body moves and covers a distance of **30 metres** from point (A) to point (B) in **3 seconds**, then reverses its direction and covers **10 metres** to point (C) in **2 seconds**. Calculate the velocity.



14 Port Said Governorate

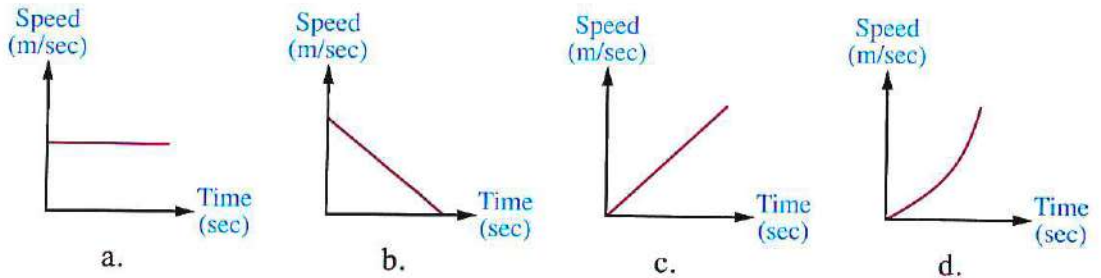
Answer the following questions :

Question 1

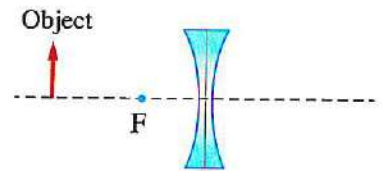
A Choose the correct answer in each of the following :

- The two basic factors that can be used to describe the movement of an object are
a. speed and time. b. displacement and speed.
c. area and time. d. distance and time.
- A car at rest, its speed increased to 32 m/sec. after 8 seconds, its acceleration will be m/sec².
a. 0.25 b. 4 c. 8 d. 24
- The phenomenon of crossing over takes place during
a. prophase I. b. metaphase I. c. anaphase I. d. telophase I.
- The scientist who suggested the nebular assumption is
a. Chamberlain. b. Molten. c. Laplace. d. Fred Hoyle.
- Each tetrad consists of
a. 4 chromatids, 2 centromeres. b. 2 chromatids, 2 centromeres.
c. 4 chromatids, 4 centromeres. d. 2 chromatids, one centromere.

6. If the relative speed of a car is 20 km/h for an observer who moves with a speed of 40 km/h in the same direction of the car, the actual speed of this car will be km/h.
 a. 30 b. 40 c. 60 d. 80
7. is (are) located in one of the spiral arms of the Milky Way galaxy.
 a. Galaxies b. The solar system c. Moons d. Stars
8. Which of the following graphs represents the movement of a car when the driver uses its brakes ?



9. It is better to refer to the non-uniform speed by the term of
 a. relative speed. b. speed. c. velocity. d. average speed.
10. If a person took a time of 10 minutes to travel from his house to his workplace and he covered a distance of 1800 metres, his speed will be equal to.....
 a. 1 km/h. b. 1 m/s. c. 3 km/h. d. 3 m/s.
11. In the opposite figure, the type of the lens used is and the properties of the image are
 a. convex, virtual and diminished.
 b. concave, real and diminished.
 c. concave, virtual and diminished.
 d. convex, real and diminished.
12. The parental individual disappears in case of reproduction in
 a. amoeba. b. yeast. c. bread mould. d. starfish.
13. Which of the following are considered as scalar physical quantities ?
 a. Length and acceleration. b. Mass and displacement.
 c. Radius and distance. d. Time and velocity.
14. If the number of chromosomes in a pollen grain of a pea flower is 7, the number of chromosomes in a leaf cell of the same plant will be
 a. 7 b. 14 c. 21 d. 28
15. The cell prepares for the start of meiotic cell division by the duplication of its genetic material during
 a. interphase b. prophase I c. metaphase I d. telophase



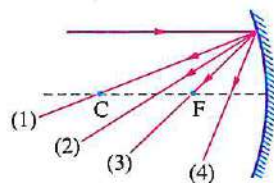
Part 3

16. The centromere of each chromosome splits lengthwise into two halves and the two chromatids separate from each other during the

- a. prophase. b. telophase. c. anaphase I. d. anaphase II.

17. In the opposite figure, the reflected ray is number

- a. 4 b. 3
c. 2 d. 1



18. Cancer cells can be detected by using nano-molecules of

- a. copper. b. iron. c. gold. d. nickel.

19. The theory that based on, when a star glows for a short time and then its glow disappears is the theory.

- a. Modern b. Crossing star c. Chamberlain and Moulten d. Nebular

20. If an object its height is 2.5 cm is placed at a distance of 10 cm from a concave mirror its radius of curvature is 30 cm, the image formed for this object will be

- a. upright, its height is 1.5 cm. b. inverted, its height is 1.5 cm.
c. real, its height is 7.5 cm. d. virtual, its height is 7.5 cm.

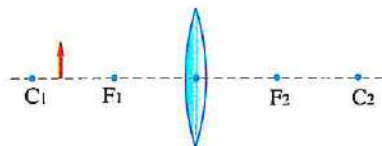
21. Displacement is a physical quantity, its unit is

- a. m. b. m.s. c. m/s. d. m/s^2

22. Some plants can reproduce vegetatively (asexually) without need for

- a. leaves. b. seeds. c. roots. d. stems.

23. When an object is placed in the position shown in the figure, the image formed for this object will be



- a. at C_1 b. at F_2
c. after C_2 d. between F_2 and C_2

24. The graphic representation (..... – time) for an object that moves with a regular speed is represented by a straight line that is parallel to the time axis.

- a. distance b. acceleration c. displacement d. speed

25. When an object its height is 4 cm is placed at a distance of 8 cm from a convex mirror, the height of the image formed by the mirror will be cm.

- a. less than 4 b. 4 c. 8 d. 16

26. The of the wind is considered by the plane pilots when they fly.

- a. average speed b. velocity c. relative speed d. speed

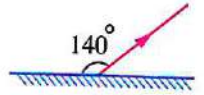
27. The two gases which produced the stars and the galaxies in the ratio 1:3, respectively, are

- a. helium and nitrogen. b. hydrogen and helium.
c. helium and hydrogen. d. oxygen and nitrogen.



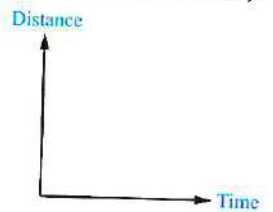
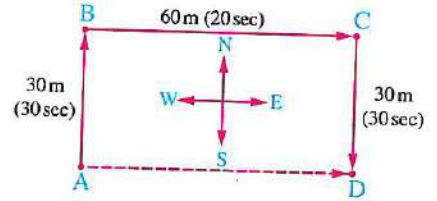
28. In the opposite figure, if the angle between the reflected light ray and the mirror surface is 140° , the angle of incidence will be

a. 20° b. 30° c. 40° d. 50°



B Answer the following questions :

29. The opposite figure is for an object that moved from point (a) to point (d) passing through points (b) and (c). Find its velocity.
30. **Give reasons :** The human life could continue if a part of his liver is cut.
31. **Compare between** short-sightedness and long-sightedness (in terms of their correction).
32. Show by drawing the graphic representation (distance-time) for an object which moves with regular speed and stopped moving for a period of time.
33. **What is meant by** regeneration in living organisms ?
34. **Mention** the first law of light reflection.



15 Fayoum Governorate

Answer the following questions :

Question 1

A Choose the correct answer in each of the following :

- Person covered a distance of 300 metre in 20 seconds he returned back to a starting point in 40 seconds, the average speed for this person during the whole trip =
a. 10 m/s b. 30 m/s c. 50 m/s d. 60 m/s
- Concave mirror with diameter is 20 cm to get magnified virtual image for an object by using this mirror, we put the object at distance from mirror.
a. 3 cm b. 5 cm c. 10 cm d. 20 cm
- When a star glows and explodes, this is due to
a. chemical reaction. b. nuclear reactions.
c. burning gases. d. glowing gases.
- Mitosis leads to the
a. formation of pollen grains. b. formation of ova.
c. formation of sperms. d. growth of living organism.

B Put (✓) in front of the right statements and (✗) in front of the wrong one :

- Budding is a type of reproduction that occurs in multicellular organisms like yeast fungus.

()

Part 3

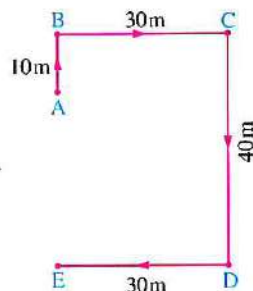
2. If the object moves with uniform speed, its acceleration = zero. ()
3. Concave lens is thin at its centre and more thick at the tips. ()
4. The spherical mirror has many principal axes. ()

C In the opposite figure :

A person moves in the path (A – B – C – D – E) in 6 sec. find :

The difference between the value of distance
and value of displacement =

The velocity =



Question 2

A Write the scientific term for each of the following statements :

1. The methods which are used by physicists to predict the relation between certain physical quantities.
2. The force that controls the movement of planets around the Sun according to the modern theory.
3. The point at which two chromatids of chromosome connected together.
4. The object that its position doesn't change with passing time.

B Correct the underlined words :

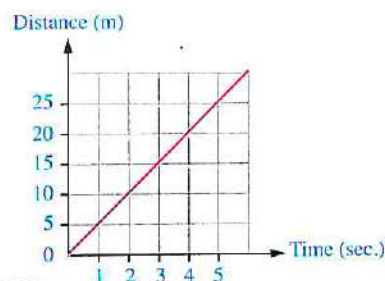
1. The spindle fibers appear during interphase.
2. The value of the object's speed relative to the observer standing on the ground is greater than its real speed.
3. The plane mirror is used at corner narrow roads to monitor the movement of cars.
4. When object covered the double distance at the same time so, its speed remained constant.

C A concave mirror has its focal length equal 4 cm. An object with length 3 cm is placed at a distance of 8 cm from this mirror; explain by drawing only two light rays to form the image for the object, then find the length of image and the distance between the image and the mirror.

Question 3

A Complete the following sentences :

1. From the figure, the time to cover 20 m = sec.
and the type of speed is
2. The focus of the convex lens is, while the
focus of the concave lens is
3. The scientist who established the nebular theory is,
while Fred Hoyle established the theory.
4. In flowering plants the male gamete is, while the female gamete is





B Write the number which indicates the following :

1. The angle of reflection if the angle between the incident light ray and the surface of plane mirror = 90°
2. The number of chromosomes in a cell of an ovary, if the number of chromosomes in a cell of its skin equals 12.
3. Speed of moving car which covers 72 km in 60 minutes with unit m/s.
4. The shortest distance at which person with normal vision sees images clearly.

C Give reason the crossing over phenomenon is a source of genetic variation.

Question 4

A Choose from column (B) what suits it in column (A) :

(A)	(B)
1. We can determine directly speed of cars by	a. the eye cornea.
2. Earliest life forms began to appear on the Earth	b. compass.
3. The parent individual disappears during reproduction of	c. the eye retina.
4. The contact lenses can stick to	d. speedometer.
	e. bacteria.
	f. before formation of galaxies.
	g. after formation of solar system.

B Exclude the unsuitable word or sentence and mention what the rest has in common :

1. Time of trip – Gravitational force – Distance of road – Mass of object.
2. Upright – Equal to the object – Reversed – Real.
3. Bread mould – Mushrooms – Paramecium – Some algae.
4. Convex lens – Concave lens – Formation of image behind the retina – Decrease of the radius of the eye sphere.

C Car moves with negative uniform acceleration = 4 m/s^2 , when the brakes are used to stop the car after 20 sec find the speed of the car at the moment of starting use brakes.

16 Beni-Suef Governorate

Answer the following questions :

Question 1

A Complete the following sentences :

1. The age of the Sun until this moment is about million years.
2. Bread mould fungus produces by
3. Vision defect which is due to increase in the convexity of the eye lens surface is treated with

Part 3

4. When the final speed of an object is less than its initial speed, it means that it is moving with a acceleration.

B First : If an object is placed at a distance of 8 cm from the pole of a mirror, a real and magnified image is formed for it.

Choose the correct answer from the following :

1. Type of mirror (concave – convex – plane – diverging).
2. If the object moves a distance of 2 cm, a real and equal image is formed for it. The focal length of the mirror = (5 – 8 – 10 – 12) cm.

Second :

1. What is the number of cells resulting from three consecutive divisions of a pancreas cell ?
2. Calculate the initial speed of an object moving with a negative acceleration = 5 m/s^2 , stopping after 4 seconds.

C Place from the words (greater than, less than, equal to) that suit the following sentence :

The speed of a train moving at a speed of 216 km through three hours the speed of a car moving at a speed of 25 m/s.

Question 2

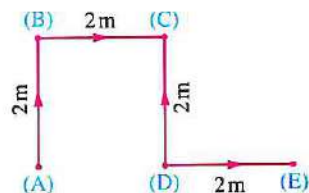
A Correct the underlined words :

1. The star explosion phenomenon is related to the sudden chemical reactions in the star.
2. When a moving object covers the same distance in half the time, its speed decreases to quarter.
3. The phase in which chromosomes arranged at the cell's equator is the anaphase.
4. The average speed can be expressed mathematically as the total distance multiplied by the total time.

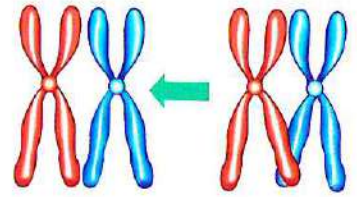
B Choose the correct answer from the brackets :

1. When an object is placed at a distance less than the focal length of a convex lens, its image is (real and magnified / real and diminished / virtual and diminished / virtual and magnified).
2. To determine time it's enough to know (direction only / magnitude only / direction and measuring unit / magnitude and direction).
3. **According to the opposite figure :**

If an object moves from point (A) to point (E) passing through points (B), (C), and (D), then the value of the distance covered is (quarter / half / equal / double) the value of the displacement.



4. The phenomenon illustrated in this figure by the first meiotic division occurs in the
(prophase I / metaphase I / anaphase I / telophase I)



- C An object placed at 4 metres away from a plane mirror, if it moves 1 metre toward the mirror, what is the value of the distance between the object and its image after it moves.

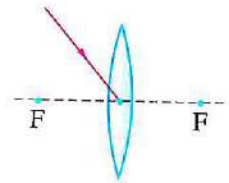
Question 3

- A Write the scientific term for the following expressions :

1. A type of asexual reproduction where the parental individual disappears.
2. Groups of galaxies are rotate together by the effect of gravity in consmic space.
3. The line connecting the two centers of curvature of the lens' surface passing through the optical center of the lens.
4. The speed at which the object covered unequal distances at equal periods of time.

- B Put (✓) or (✗) in front of the following statements :

1. The image formed by a convex mirror is always real and erect. ()
2. If the number of chromosomes in a skin cell is (2N), then its number in an ovary cell is (2N). ()
3. Measuring the relative speed of a moving object depends on the observer's state and the direction of its movement. ()
4. The illustrated light ray in the opposite figure passes and refracts parallel to the principal axis of the lens. ()



- C Choose from the words :

(Testis – Cytoplasm – Anther – Centrosome) the part which is responsible for formation of the male gametes in the flowering plants.

Question 4

- A Extract the odd word in each of the following :

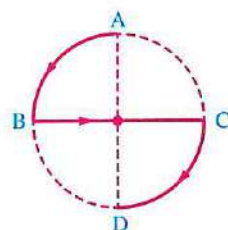
1. Zygote – Ovum – Sperm – Pollen Grain.
2. (km/h), (m/s), (km/s), (m/s²).
3. Nebular theory – Crossing Star theory – Big Bang theory – Modern theory.
4. At cars Park – In front light of cars – At shopping centers – On the narrow road corners.

- B Give one example for each of the following :

1. Unicellular living organism that reproduces by budding.
2. An optical piece that gives an inverted image to the original object.
3. A method used by physicists to describe physical phenomena in an easy way.
4. An optical piece that is used to correct vision defects instead of the medical glasses and is placed on the cornea of the eye.

Part 3

- C** A car moves in a circular path with a diameter of 14 metres from point (A) to point (D), passing through points (B), (C) in 10 seconds as illustrated.



Calculate the speed.

Given that (Circumference of the circle = $2\pi r$, Where $\pi = \frac{22}{7}$).

17 Minia Governorate

Answer the following questions :

Question 1

- A** Write the scientific term :

1. A vision defect is due to the formation of the image of far objects in front of the retina of the eye.
2. A phenomenon contributes in genes exchanging between the two homologous chromosomes' chromatids, and distributing them randomly in the gametes.
3. The change in the position of the object relative to the position of another fixed object by the time passes.
4. The space which contains all the galaxies, stars, planets, moons, and living organisms.

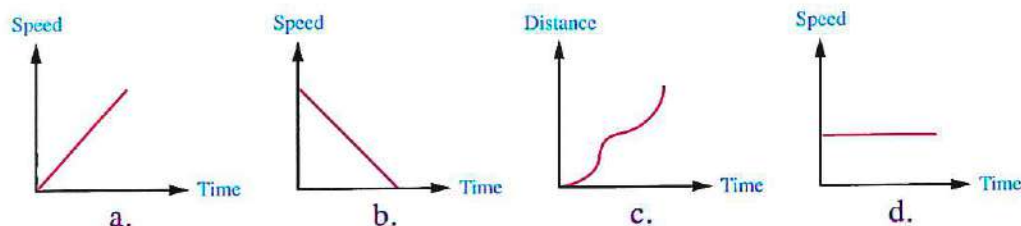
- B** Complete the following statements with the suitable from the following words between the brackets :

(Interphase – 4 m/s^2 – Metaphase – 80 cm – on itself – 6 m/s^2 – parallel to principal axis – 180 cm)

1. The genetic material duplicates in a phase called
2. A car starts its motion from rest till its speed reaches 24 m/s after 6 seconds, so its acceleration of motion equals
3. The incident light ray passing through the center of curvature of a concave mirror, so it reflects
4. A person of 180 cm tall stands in front of a plane mirror, so the length of his image equals

- C** Study the following graphs, then answer :

Which of the following graphs represents the movement of an object at zero acceleration ?





Question 2

A Choose the correct answer for each of the following :

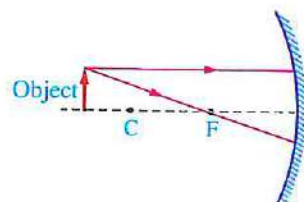
1. An object moves a distance of 20 metres in a straight line in one direction, so the amount of its displacement is
a. 20 metres. b. 50 metres. c. 60 metres. d. zero.
2. Flying in the same direction of the wind leads to all of the following except
a. decreasing the time of the trip. b. decreasing the amount of the fuel consumed.
c. increasing the time of the trip. d. increasing the velocity of the plane.
3. The percentage of helium gas was formed within minutes after Big Bang is
a. 3 % b. 25 % c. 50 % d. 75 %
4. The reproduction by budding occurs in multicellular living organisms such as
a. yeast fungus. b. mushroom fungus.
c. bread mould fungus. d. sponge.

B Correct the underlined words in the following statements :

1. When a body moves at uniform negative acceleration, this means that its final speed equals its initial speed.
2. Nucleolus and nuclear membrane disappear at the end of anaphase of mitotic division.
3. Plane mirrors are used in marine lighthouses that are found at marine ports to guide ships.
4. A train moves with a speed 20 m/s, this means that it covers 200 metres within time 4 seconds.

C In the opposite figure :

Draw the opposite diagram in your answer paper, and complete the path of light rays to obtain an image of object, then mention the properties of the formed image.



Question 3

A Cross out the odd word in each of the following :

1. Mass – Force – Distance – Length.
2. Virtual image – Upright – Real image – Behind the mirrors.
3. Nebular theory – Big Bang theory – Crossing star theory – Modern theory.
4. Amoeba – Paramecium – Bacteria – Hydra.

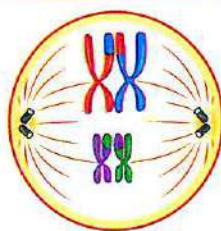
Part 3

B Choose from column (B) what suits it in column (A) :

(A)	(B)
1. Fertilization	a. the distance covered at a certain direction from the primary position of movement towards its final position.
2. Contact lens	b. it always forms virtual images for objects.
3. The displacement	c. it is used to treat the vision defects instead of medical glasses.
4. Convex mirror	d. it is the combination of a male gamete and a female gamete to form a zygote.
	e. it always forms real images for objects.

C From the opposite figure, answer :

What is the type of the cell division that this figure belongs to ?
And what is the importance of this cell division ?



Question 4

A Put (✓) or (✗) in front of the following statements :

- When the observer is moving in the same direction of the moving object at the same speed, so the relative speed of moving object equals zero. ()
- If the distance between the two centers of curvature of lens is 16 cm, so its focal length equals 8 cm. ()
- The earliest life forms began to appear on the Earth within minutes after the massive explosion. ()
- The sexual reproduction is considered as a source of genetic variation. ()

B Study the following figures, then complete statements below :

Distance Time 1. The graph represents an object	Object 2. The image of object is erect and diminished.	3. This organism reproduces asexually by	4. Angle of reflection = °
--	--	---	---

C A car moves with a uniform speed 90 m/sec. If the driver used the brakes, so its speed decreases by 5 m/sec².

Calculate : Car speed after 12 seconds from the moment of using the brakes.



18 Assiut Governorate

Answer the following questions :

Question 1

A Complete the following statement by the suitable words :

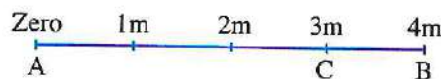
1. The vision defect which results from increasing in the convexity of the eye lens's surface is called
2. The difference between velocity and displacement is in
3. The Sun takes about to complete one rotation around the centre of the galaxy.
4. The meiotic division in flowering plants occurs in the anther to produce

B Put (✓) in front of the right statements and (✗) in front of the wrong one :

1. Unicellular protozoans reproduce by binary fission. ()
2. When the light ray falls by an angle equals zero on the reflecting surface so, the reflected light ray will be perpendicular on the reflecting surface. ()
3. Two cars move in the opposite direction with speed 100 km/h for each, so the speed of the second car as estimated by the driver of the first car equals zero. ()
4. The focus is a point inside the lens that lies on the principal axis. ()

C In the opposite figure if a person moves from point (A) to point (B) and returns to point (C) calculate :

1. Total covered distance =
2. Displacement =



Question 2

A Choose the odd one word (or statement) out and write the relation between rest statements or words :

1. Force – Acceleration – Mass – Displacement.
2. Simple algae – Bacteria – Paramecium – Sponge.
3. Nebular theory – Crossing star theory – Big Bang theory – Modern theory.
4. (m/sec) – (km/h) – (m/min) – (m/sec²)

B Write the scientific term of each of the following :

1. A moving object covers equal distance at unequal periods of time.
2. The ability of some animals to compensate their missing parts.
3. It is any straight line that passes by centre of curvature of mirror and any point on its reflecting surface except the pole of the mirror.
4. The speed of a moving object relative to a static or a moving observer.

Part 3

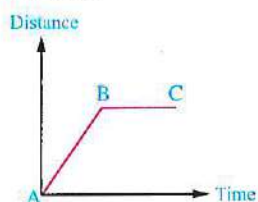
C Give reasons for the following :

1. The object that is placed at the focus of a convex lens doesn't form an image.
2. The concave mirror is used to produce heat.

Question 3

A Choose the correct answer from the given answers :

1. An object was put at 10 cm from a concave mirror, a real inverted and equal image was formed, if the object moved 3 cm towards that mirror, so the formed image will be
 a. real, inverted and diminished. b. virtual, upright and diminished.
 c. real, inverted and enlarged. d. virtual, upright and enlarged.
2. The vegetative reproduction occurs in plants without the need to
 a. leaves. b. seeds. c. roots. d. stems.
3. In the opposite figure, the magnitude of object's speed in period (BC) equals the magnitude of its in period (AB).
 a. speed b. acceleration
 c. distance d. time
4. According to the Big Bang theory, within minutes from the origin of the universe, the ratio of hydrogen to helium gases, respectively was
 a. 1 : 1 b. 1 : 2 c. 1 : 3 d. 3 : 1



B Choose from column (B) what suits it in column (A) :

(A)	(B)
1. Concave mirror	a. the change of an object position as time passes according to the position of another object.
2. Bread mould fungus	b. used at cars' parking.
3. Convex mirror	c. reproduces asexually by regeneration.
4. Acceleration $\times$ time	d. The dentist uses it during the examination.
	e. change of an object speed.
	f. reproduces asexually by producing spores.

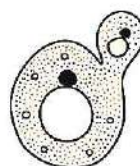
C Study the following figures, then answer the question :

Fig. (1)



1. The follows the phase shown in the figure.
2. This phase belongs to division.

Fig. (2)



1. The name of this figure is
2. The type of asexual reproduction is



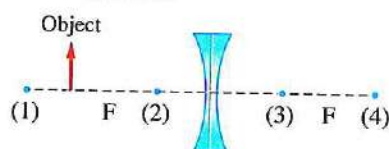
Question 4

A Correct the underlined words in the following sentences :

1. Crossing over phenomenon occurs at first anaphase .
2. The contact lenses are put directly on eye retina and can be removed easily.
3. Sudden violent chemical reactions occur within the star which lead to its explosion.
4. It is possible to identify the speed of the car directly by using compass.

B Write the number which refers to :

1. The number of chromosomes in a fertilized ovum of an animal, if the number of chromosomes in its sperm is 16 chromosomes.
2. The radius of spherical mirror that its focal length equal 5 cm.
3. The speed of a car covering a distance of 1200 metres in a half minute.
4. The position where a virtual, erect and diminished image is formed in the opposite figure.



C On a straight line there is a car moves by 90 km/h then the brakes are applied, the car stops after 10 seconds.

- A. Calculate the acceleration with which the car moved from the moment the brakes were applied.
- B. Mention the type of acceleration.

19 Sohag Governorate

Answer the following questions :

Question 1

A Complete the following sentences :

1. The Sun takes about 220 million years to complete one rotation around the centre of
2. A car moves at speed of 180 Km/h so its speed equals m/sec.
3. Each chromosome consists of two threads, each thread is called
4. A virtual, upright and reversed image can be formed by mirror.

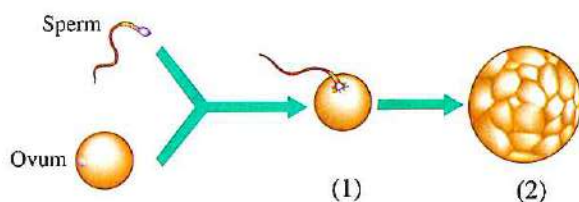
B Put (✓) or (✗) :

1. The virtual image cannot be received on a screen. ()
2. The time is a scalar physical quantity. ()
3. The universe merged from the particles of oxygen and nitrogen. ()
4. The genetic material in the cell duplicates in the prophase. ()

Part 3

C The opposite figure represents one of the important processes to complete the reproduction :

1. The process that represented in number (1) is
2. The name of the resulting cell in number (2) is



Question 2

A Write the scientific term :

1. A point inside the lens that lies on the principal axis in the mid distance between its two faces.
2. Exchange of some parts of the two inner chromatids in a tetrad.
3. The object speed decreases by time.
4. The speed of a moving object relative to a static or a moving observer.

B Extract the odd word:

1. Pollen grain – Testes cell – Ovum – Sperm.
2. Kilometre / hour – Metre / second – Metre / minute – Metre / second².
3. Hydra – Bread mould fungus – Sponge – Yeast fungus.
4. Real – Virtual – Upright – Magnified.

C Within 2.5 seconds the speed of a car increases from 15 m/sec. to 25 m/sec., while a bike moves from rest and its speed 5 m/sec. in the same time.

- Calculate :**
1. The acceleration of car and the acceleration of bike.
 2. Which one moves at greater acceleration ?

Question 3

A Correct the underlined words :

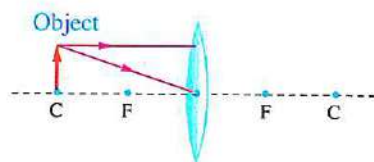
1. The convex mirror always forms an inverted and small image.
2. The simplest type of motion is the motion in curved line.
3. It is hard to measure average speed practically.
4. The glowing and explosion of stars, is due to chemical reaction.

B Choose from column (B) what suits it in column (A) :

Group (A)	Group (B)
1. Pollen grain	a. is used to treat short-sightedness.
2. Concave lens	b. is the displacement in one second.
3. Laplace	c. founder of nebular assumption.
4. Velocity	d. gamete that is produced by the germination of anther in the flowering plants.
	e. founder of the modern theory of the world.

C Draw the opposite figure in your answer paper then :

1. Draw the refracted light rays to obtain an image for the object.
2. Mention the properties of the formed image.



Question 4

A Choose the correct answer :

1. If the focal length of a concave mirror is 5 cm so, its diameter equals
a. 5 cm b. 10 cm c. 15 cm d. 20 cm
2. The parental individual disappears when reproduction occurs in the
a. sporogony. b. regeneration. c. binary fission. d. budding.
3. The length of actual path covered by a moving body from the starting point to the ending point of motion is
a. displacement. b. acceleration. c. speed. d. distance.
4. When light ray falls on a plane mirror with an angle of 45° so, the angle of incidence equals
a. 90° b. 45° c. 60° d. 30°

B Write the number that corresponds to each statements :

1. The number of cells resulting from mitosis.
2. Train moves at speed 100 Km/h and covers a distance 40 km. Find the time.
3. The distance between person and his image if he stands a distance of 3 m from plane mirror.
4. Period time from the Big Bang until appearance of the universe as we know it today.

C Give reasons for :

1. The force is considered a vector physical quantity.
2. The object that is placed at the focus of a convex lens has no image.

20 Qena Governorate

Answer the following questions :

Question 1

A Complete the following sentences :

1. If the uniform speed of a car is 72 Km/h, this means that its speed equals m/sec.
2. Spindle fibers in the animal cell, are formed from
3. galaxy contains millions of stars where the Sun is one of them.
4. The dentist uses mirror during the examination.

Part 3

B Cross out the odd word :

1. Force – Acceleration – Displacement – Time.
2. Equal to the object – Virtual – Inverted – Reversed.
3. Pollen grains – Ovules – Sperms – Anthers.
4. Real inverted diminished – Real inverted equal to the object – Real inverted magnified – Virtual inverted equal to the object.

C Choose the correct answer :

A train moved with speed 40 m/sec., when the driver used the brakes, the train gained negative uniform acceleration 8 m/sec^2 . The time needed to stop the train since using the brakes is

- a. 10 sec. b. 5 sec. c. 7 sec. d. 6 sec.

Question 2

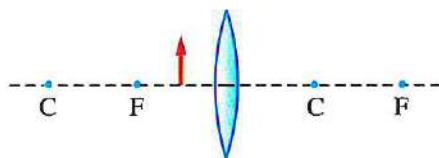
A Choose the correct answer :

1. Division of occurs to form sperms.
a. mitosis in testes b. meiosis in testes c. mitosis in ovary d. meiosis in ovary
2. Speed of car covers 200 metres in 5 seconds is
a. 20 m/sec. b. 40 m/sec. c. 50 m/sec. d. 30 m/sec.
3. Founder of is the scientist Fred Hoyle.
a. Big Bang theory b. modern theory
c. crossing star theory d. nebular theory
4. If an object started to move from rest with uniform acceleration 2 m/sec^2 , so its final speed after 2 seconds equals
a. 4 m/sec. b. 6 m/sec. c. 8 m/sec. d. 10 m/sec.

B Put (✓) or (✗) :

1. Mass is considered a scalar physical quantity. ()
2. The simplest type of motion is the motion in curved line. ()
3. If a person stands in front of plane mirror at distance 3 metres from it, the distance between his image and the mirror is 6 metres. ()
4. Somatic cells are divided by mitotic division. ()

- C Draw the following figure in your answer paper,**
draw the path of incident rays from the object on the lens to get an image for the object and write the properties of the formed image.

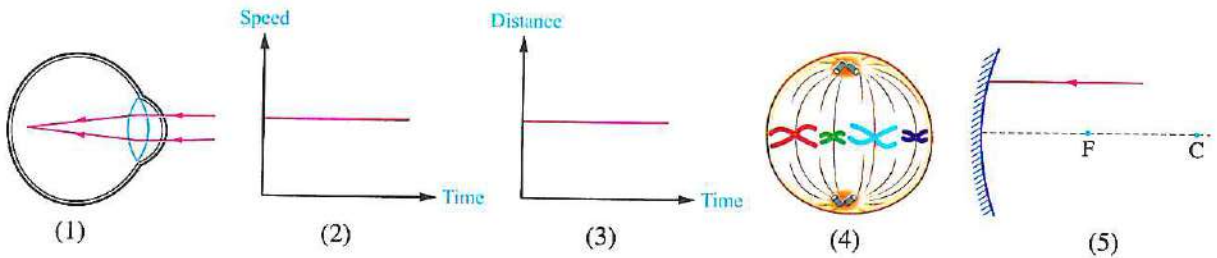


Question 3

A Write the scientific term for each of the following statements :

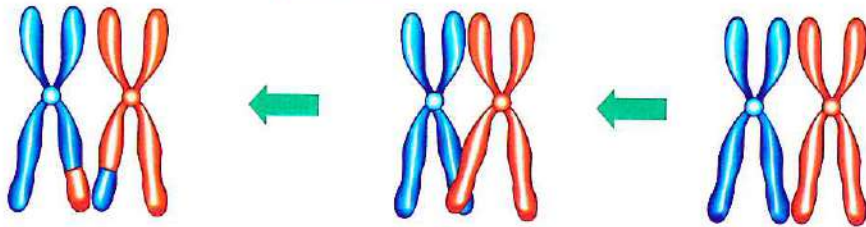
1. Speed of moving object relative to a static observer.
2. It includes all galaxies, stars, planets and living organisms.
3. Area of connection of two chromatids of chromosome.
4. The angle between the reflected light ray and the line perpendicular at point of incidence on the reflecting surface.

B Study the following figures then complete the following :



1. The vision defect in figure (1) can be corrected by using lens.
2. The figure number describes the state of a static object.
3. The figure (4) represents
4. The incident light ray on concave mirror in figure (5) reflects passing through

C The following figure represents a biological phenomenon. What is the name of this phenomenon and what is its importance ?



Question 4

A Choose from column (B) what suits it in column (A) :

(A)	(B)
1. Vegetative reproduction	a. the object covers equal distances at equal periods of time.
2. Convex mirror	b. they are groups of stars in the universe.
3. Regular speed	c. it can be occur by different parts of the plant except seeds.
4. Galaxies	d. it converges light rays falling on it.
	e. it is put on the left side of the driver of the car.

B Correct the underlined words :

1. The lens is transparent medium that reflects the light and it is limited by two spherical surfaces.
2. Pollination process is the combination of a female gamete and a male gamete to form a zygote.
3. Acceleration is the result of multiplying of the speed of moving object by the time.
4. Center of mirror curvature is the point that is in the middle of the reflecting surface of the mirror.

C How can you explain ?

Physicists use mathematical relations like graphs and tables.

21 Luxor Governorate

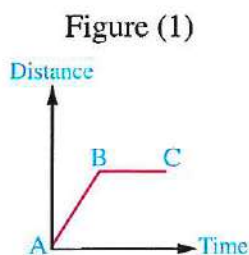
Answer the following questions :

Question 1

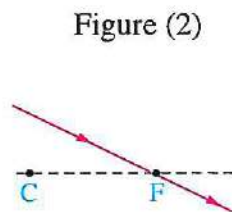
A Complete the following sentences :

1. A theory that explains the origin of the universe based on the sciences of physics and astronomy is
2. The focal length of the thick convex lens is the focal length of the thin convex lens.
3. The reproduction does not require special systems or structures in the living organisms.
4. It is practically difficult to an object to move with speed.

B Study the following figure, then answer :



The time interval during which the body is at rest



The incident light ray reflects



Figure (3)

This figure represents

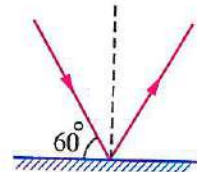


Figure (4)

The angle between the incident light ray and the reflected light ray equals

- C** The following mathematical relationship includes three physical quantities.

$$\text{Average velocity} = \frac{\text{Displacement}}{\text{Total Time}}$$

What is the number of the vector physical quantities in this relation, what are these quantities ?

Question 2

- A** Write the scientific term of each of the following :

1. The change of an object position (location) according to the position of another fixed object as the time passes.
2. The phenomenon that contributes in the exchange of genes between the two homologous chromosome's chromatids and distributing them randomly in the gametes.
3. The continuous separation between galaxies in the space as a result of their regular movement.
4. The distance covered at a certain direction.

- B** Put the suitable word of these words in the following spaces :

(double – half – quarter – equals to)

1. The relative speed of a moving object relative to an observer at rest its real speed.
2. The number of the resulting cells from mitosis the number of the resulting cells from meiosis.
3. The radius of mirror curvature is its focal length.
4. When the moving object covers half the distance in double the time required to cover this distance, so the speed will decrease to of its value.

- C** A lens is placed in front of sun rays, a very small image is formed and can be received on the screen. What is the type of the lens ? (Give a reason).

Question 3**A Write the number which refers to :**

1. The planets in the solar system.
2. The acceleration when an object moves with a uniform speed.
3. The duplicating of the genetic material during the meiotic division.
4. The centers of curvature of the convex lens.

B Choose the correct answer :

1. The speed of the car increases to 10 times its initial speed in 3 seconds, therefore the car moves at positive acceleration equals of its initial speed.
a. quarter b. half c. double d. three times
2. The short-sightedness leads to collection of the light rays coming from the object the eye retina.
a. in front of b. on c. behind d. below
3. The reproduction in yeast fungus and starfish depend on
a. meiotic division. b. spore propagation. c. mitotic division. d. binary fission.
4. The real image is always
a. smaller. b. inverted. c. upright. d. magnified.

- C** If the nucleus of a cell contains 8 chromosomes during the prophase I,
What is number of the chromosomes in one of the resulting cells in the telophase II.

What is the importance of this cell division ?

Question 4**A Correct the underlined words :**

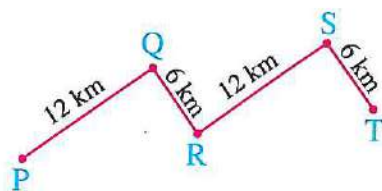
1. The object placed at the pole of the mirror has no image.
2. When the object moves in a circular path whose radius (r) to pass the distance ($2\pi r$), so its displacement equals (2 r).
3. The founder of the nebular theory to explain the origin of the solar system is the scientist Fred Hoyle.
4. The gamete contains genetic material from both parents.

B Put (✓) or (✗) in front of the following sentences :

1. The person who fixes the watches uses the lenses. ()
2. An object moves from rest and its speed reaches 10 metres / second. through 2 seconds from the start of moving, the change in its speed equals 20 m/sec^2 . ()
3. The formed image by the concave lens is real. ()
4. The gametes are resulted from special cells called the reproductive cells. ()

C In the opposite figure :

A car traveled from (P) to (T) within an hour.
Calculate the average speed at which the car is moving in m/sec. ?



22 Aswan Governorate

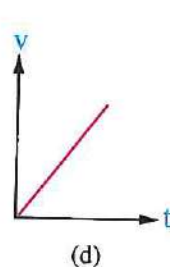
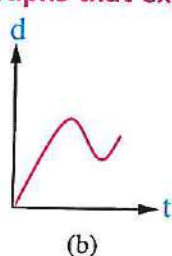
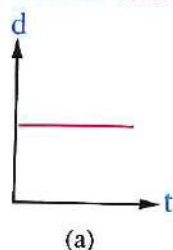
Answer the following questions :

Question 1

A Complete the following sentences :

1. The image can be received on a screen.
2. Somatic cells are divided by division.
3. An object moves a speed of 72 Km/h equals to m/s.
4. Measuring relative speed depends on

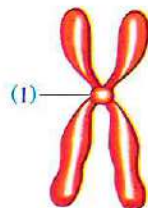
B Choose the suitable graphs that express the following :



1. An object moves by regular acceleration
2. An object moves by regular speed
3. An object moves by irregular speed
4. Static object

C From the opposite figure :

Number (1) refers to



Question 2

A Write the scientific term for the following statements :

1. The physical quantity that can be determined by knowing its magnitude only.
2. The straight line that joins between the two centres of curvature of the lens passing by its optical center.
3. Change of an object position according to another fixed object as time passes.
4. It contains all galaxies, stars, planets, and living organisms.

Part 3

B Cross the unsuitable word :

1. Displacement – Mass – Time – Length.
2. Amoeba – Paramecium – Mushroom fungus – Euglena.
3. The eye – Binocular – Solar oven – Medical glasses.
4. Crossing star theory – Nebular theory – Big Bang theory – Modern theory.

C Give reason for no image is formed for an object placed at the focus of convex lens.

Question 3

A Choose the correct answer :

1. Crossing over phenomenon happens in
a. prophase 1. b. metaphase 1. c. anaphase 1. d. telophase 1.
2. The two gases that produced galaxies and stars millions years ago are
a. oxygen and helium. b. oxygen and carbon dioxide.
c. hydrogen and helium. d. hydrogen and nitrogen.
3. When an object covers equal distances in equal periods of time, that means that the object moves by
a. uniform speed. b. uniform acceleration.
c. increasing speed. d. accelerating motion.
4. Optical piece that forms real inverted equal in size image to the object is
a. plane mirror. b. convex lens. c. concave lens. d. convex mirror.

B Choose from column (B) what suits it in column (A) :

(A)	(B)
1. Mushroom fungus	a. centre of curvature is in front of reflecting surface.
2. Yeast fungus	b. reproduce by spores.
3. Concave mirror	c. reproduce by binary fission.
4. Convex mirror	d. centre of curvature is behind the reflecting surface.
	e. reproduce by budding.

C Show by drawing only the formation of real, inverted and magnified image by using a convex lens.

Question 4

A Correct the underlined words :

1. Image formed by plane mirror is real.
2. Sexual reproduction keeps the same genetic structural of living organism.



3. The nucleolus disappears during mitosis division at telophase.
4. Short-sightedness is corrected by concave mirror.

B Complete the following by using the given words :

(zero – 55° – distance – displacement – speed – 90°)

1. When an object moves in straight line in one direction so displacement =
2. Velocity is vanished when equals zero.
3. If the angle between incident light ray and reflecting surface is 35° so the angle of incidence equal =
4. Perpendicular incident light ray on a concave mirror is reflected by angle =

C A car moves by speed 60 m/s when the driver use the brakes so the speed decreases by 2 m/s^2 , Calculate its speed after 10 seconds from pressing the brakes.

23

Red Sea Governorate

Answer the following questions :

Question 1

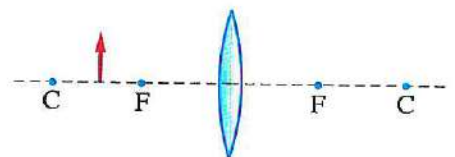
A Complete the following sentences :

1. The two gases which produced galaxies, stars and universe over millions of years are hydrogen and
2. The combination of a male gamete and a female gamete produces
3. The optical piece that forms an upright, virtual and equal image of the object is
4. The result of multiplying acceleration of moving object by the time equals change in the of moving object.

B Cross out the odd word :

1. Acceleration – Displacement – Force – Distance.
2. Convex mirror – Inverted image – Diminished image – Virtual image.
3. Production of ova – Compensation of the damaged cells – Completing the asexual reproduction – Growth of living organisms.
4. Amoeba – Bacteria – Starfish – Simple algae.

C Transfer the drawing in your answer sheet, then complete the path of incident rays to form image, then mention the properties of the image.

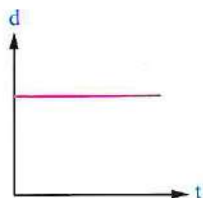


Question **2**

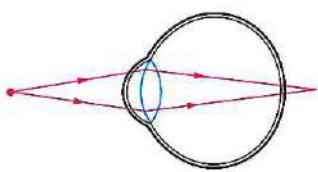
A Write the scientific term for each of the following statement :

1. The value of change in displacement at a unit time.
2. Asexual reproduction that occurs by using plant organs without needing seeds.
3. It is the wide space that contains galaxies, stars, planets and living organisms.
4. The mid point of the reflecting surface of the mirror.

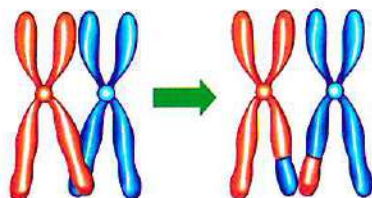
B Study the following figures, then answer :



1. The figure represents
.....



2. The vision defect in
this case is



3. This phenomenon
is known as
4. This phenomenon occurs
during

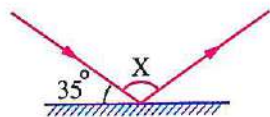
C Give reasons for :

1. The moving car with a certain speed seems to be at rest to the moving observer with the same speed and the same direction.
2. Interphase comes before cell division.

Question **3**

A Choose the correct answer :

1. In the opposite figure, a light ray falls on a plane mirror so the value of angle (X) is
a. 35 b. 110 c. 55 d. 70
2. The source of genetic variation is the reproduction.
a. budding b. vegetative c. sexual d. asexual
3. An object is placed at 20 cm from a convex lens of focal length 10 cm, the image of the object is formed at a distance cm from the object.
a. less than 20 b. equals to 20 c. less than 40 d. equals to 40
4. The number of chromosomes in a male sperm is the number of chromosomes in a female ovum from the same kind.
a. equal to b. half c. double d. quarter



B Complete the spaces in the following table :

Points of comparison	$V_2 > V_1$	$V_2 = V_1$	Points of comparison	Animal cell	Plant cell
Type of acceleration	(1)	(2)	Formation of spindle fibers	(3)	(4)

- C** A racer covered a distance of 100 metres of a straight track in 10 seconds, then he returned back walking on foot, he took 40 seconds to come back to the starting point.
Calculate the racers average speed during the whole trip (go and return).

Question 4

A Correct the underlined words :

1. A person moves from the starting point 20 m. westward then he returns back on the same road 8 m. eastward, so the difference between the displacement and the distance equals 14 m.
2. The radius of curvature of the mirror = the focal length $\times \frac{1}{2}$.
3. The simplest type of motion is the motion in a curved line.
4. The crossing star is a big star that can be seen from the Earth.

B Mention one example for each of the following :

1. Multicellular living organism that reproduces by budding.
2. Tool used to measure the speed of car directly.
3. Gametes which are produced from the division of anther's reproductive cells of the flowering plants.
4. They are used instead of the medical glasses and can stick to eye cornea.

C What happens in the following cases ...?

1. If the nebula lost its heat according to Laplace theory.
2. The incident light ray passes through the centre of curvature of the concave mirror.

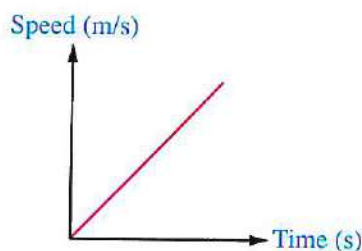
24 North Sinai Governorate

Answer the following questions :

Question 1

A Choose the correct answer :

1. The opposite graph represents the movement of an object at
 a. positive uniform acceleration.
 b. negative uniform acceleration.
 c. irregular speed.
 d. regular speed.



Part 3

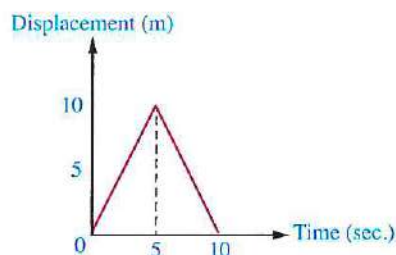
- When an object its length is 4 cm is put in front of a convex mirror, so the length of the image equals cm.
a. 16 b. 8 c. 4 d. 2
- The continuous expansion of the universe is due to as the time passes.
a. separation of galaxies b. approaching of galaxies
c. stability of galaxies d. merged of galaxies together
- Chromosomes are found in the
a. mitochondria. b. endoplasmic reticulum.
c. green plastids. d. nucleus.

B Write the scientific term for each of the following statements :

- It is actual length of the path that a moving object takes from the starting point of the movement to the end point.
- It is the image that cannot be received on a screen and it is always erect.
- It is a point inside the lens that lies on the principal axis in the mid distance between its two faces.
- A type of reproduction that takes place by only one parent, without producing gametes.

C Study the following figure, then complete :

Total distance = and the amount of velocity after five seconds =



Question 2

A Put (✓) or (✗) in front of the following sentences :

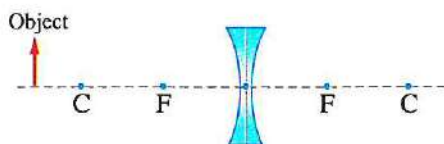
- To identify the force its necessary to know its magnitude and its direction. ()
- When the object covers double the distance during the same time the speed will decrease to quarter. ()
- The unicellular protozoans reproduce by binary fission. ()
- Ferd Holye assumed the nebular theory. ()

B Complete the following sentences :

- When the object covers equal distance at periods of time, so $\vec{V} \neq V$
- The reproduction causes the genetic variation among living organisms.
- is used to manufacture space observation telescopes.
- The final speed for a moving object by negative acceleration equals

C In the opposite figure :

Draw two light rays that determine the position of the formed image, and mention the properties of the formed image.





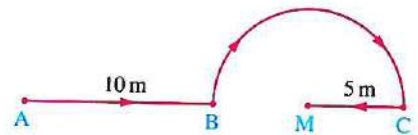
Question 3

A Correct the underlined words :

1. Compass helps us in identifying the speed of the car directly.
2. When the human body cell divides, the spindle fibers is formed from intensifying the cytoplasm at the prophase.
3. If an object is placed at a distance 40 cm from a convex lens its focal length is 20 cm, an image is formed at distance 10 cm.
4. The solar system is located in one of circular arms of the Milky Way galaxy.

B Study the following figures and choose the correct answer :

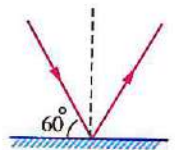
1. An object is moving from point (A) to point (M) which represents the centre of the circle, passing by two points (B, C), the amount of its displacement = m.



- a. 5 b. 10
c. 15 d. 20

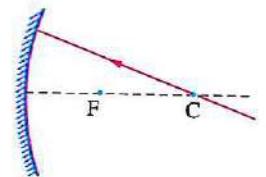
2. A light ray falls on a plane mirror as in figure, the angle of reflection =

- a. 120° b. 90°
c. 60° d. 30°



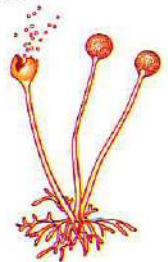
3. In the opposite figure the incident light ray.....

- a. reflected parallel to principal axis.
b. reflected through the focus.
c. reflected in an angle of 40° .
d. reflected on itself.



4. In the opposite figure, this living organism reproduces asexually by

- a. spore propagation.
b. regeneration.
c. budding.
d. vegetative reproduction.



C Comparison between mitosis and meiosis :

Points of comparison	Mitosis	Meiosis
Site of occurrence :		
Number of the produced cells :		

Question 4

A Choose from column (B) what suits it in column (A) :

Column (A)	Column (B)
1. The crossing star theory	a. the point that in the middle of the reflecting surface of the mirror.
2. Focus of concave mirror	b. it takes place between two inner chromatids of each tetrad.
3. Crossing over phenomenon	c. the result of dividing the covered total distance and the total time taken to that.
4. Average speed	d. it assumed that the origin of the solar system was a big star which is the Sun.
	e. it is the point of collection of rays reflected from the mirror after falling parallel to the principal axis.
	f. it takes place at the end of metaphase.

B Give one example for each of the following :

1. Vision defect which is due to increasing in the radius of the eyeball.
2. The motion in one direction.
3. Type of mirrors which forms an upright, equal and laterally reversed image of the body.
4. Gametes which are produced from the division of anther's reproductive cells of the flowering plants.

C If the relative speed of car equals 120 km/h, and a radar observes it which is founds in another car moving at a speed of 50 km/h in the opposite direction, if the maximum speed on this road is 90 km/h.
Does the car exceed the maximum speed limit ? Explain your answer mathematically.

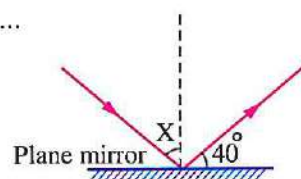
25 South Sinai Governorate

Answer the following questions :

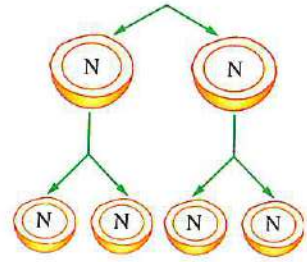
Question 1

A Complete the following sentences :

1. The Sun and the surrounding planets revolve around the
2. In the following figure :
angle of incidence (X) equal
3. The actual speed of a car whose relative speed is 70 km/h relative to an observer moving in the opposite direction at a speed 40 km/h equals km/h.



4. In the opposite figure,
the type of the division is



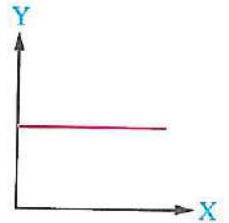
B Choose the correct answer :

- The chromosome is chemically consists of
a. nuclear acid DNA only. b. protein only.
c. fats. d. protein and nuclear acid DNA.
- A person holds a pen by its left hand in front of a plane mirror, so the image of the pen appears at side because it is
a. left – inverted. b. right – inverted. c. left – upright. d. right – upright.
- The ratio between the initial speed and the final speed for an object moves with deceleration
a. greater than one. b. less than one. c. equal one. d. equal zero.
- An object was placed in front of concave mirror its focal lens equal 8 cm, the image is formed at a distance 20 cm from the mirror, so the distance between the object and the mirror equal
a. 4 cm. b. 8 cm. c. 12 cm. d. 20 cm.

C The following figure represents an object moves with uniform speed. Choose from between two brackets :

(distance – speed – acceleration – time)

The (X) axis represents and (Y) axis represents



Question 2

A Put (✓) or (✗) :

- The speed of the moving object increases by increasing the time required to cover a certain distance. ()
- The solar system contains many of stars. ()
- The parental individual disappears during binary fission. ()
- An object moves a distance 100 metre at north, then 30 metre at south, the difference between the covered distance and the displacement equal 60 metre. ()

B Write the scientific term for each of the following statements :

- The movement in which the body covers equal distances in equal time during moving in straight line.

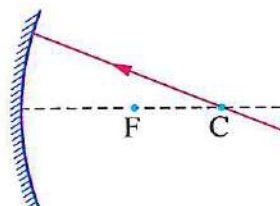
Part 3

2. A vision defect results due to the decrease in the convexity of eye lens surface.
3. A vector quantity its measuring unit metre / second (m/s) each one second.
4. The phase which follows the duplication of the genetic material during cell division.

C In the following figure :

How does the incident ray reflect ?

Write your explanation.



Question 3

A Correct the underlined words :

1. Contact lenses can stick directly to the eye retina.
2. A muscle cell contains (23) pairs of chromosomes, so the number of chromosomes in an ovary cell equal (88) chromosome.
3. When the universe was formed it contains hydrogen and helium gases in a ratio (1 : 3) at the beginning of the Big Bang.
4. A train moves at a speed 72 km/ hour, so the distance covered by the train in half a minute equal 500 metre.

B Cross odd the unsuitable word or sentence :

1. Mass – Length – Force – Time.
2. Magnified Image – Concave lens – Convex lens – Virtual.
3. Unicellular protozoans – Simple algae – Bacteria – Sponge.
4. Telescopes – Mirrors – Magnifying lenses – Microscopes.

C What happens when an amoeba cell divides three mitotic divisions ?

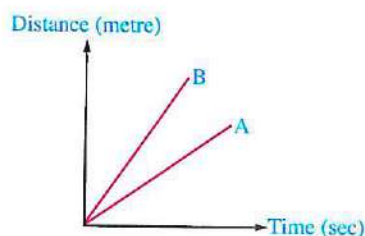
Question 4

A Choose from column (B) the suitable for column (A) :

(A)	(B)
1. Plant cells	a. established the modern theory.
2. Fred Hoyle	b. change in speed of moving object.
3. Pole of the mirror	c. established the nebular assumption.
4. Acceleration $\times$ time	d. the spindle fibers are formed from the centrosome.
	e. a point in the middle of reflecting surface of a spherical mirror.
	f. the spindle fibers are formed from the cytoplasm.
	g. the displacement in one second.

B Choose the correct answer :

- In the opposite figure, the object moves with highest speed.
a. A b. B
- The person with normal vision sees the near objects clearly at a distance not less than
a. 25 cm. b. 8 metre.
- The centromere of each chromosome splits lengthwise into two halves during
a. anaphase. b. anaphase I.
- The focal length (F) of the spherical mirror equal of the radius of curvature (R).
a. double b. half



- C Calculate the average speed for a runner covered a distance of 175 metres in 15 seconds and then come back walking to the starting point in 55 seconds.**

26 New Valley Governorate

Answer the following questions :

Question 1

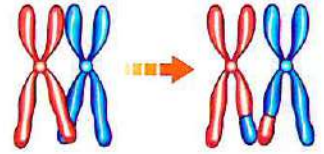
A Choose the correct answer :

- The factors that can describe the motion of an object are
a. speed and time. b. distance and time.
c. area and time. d. displacement and force.
- The number of chromosomes in the gamete is the number of chromosomes in the original cell.
a. equal to b. double c. half d. quarter
- The focal length of a concave mirror can be calculated from the relation $f =$
a. $r \times 2$
b. $\frac{2}{r}$
c. $\frac{1}{4} \times$ the diameter of the sphere which the mirror is a part of it.
d. $\frac{1}{2} \times$ diameter of the sphere which the mirror is a part of it.
- When an object moves with an acceleration equals zero, this means that
a. its speed is variable. b. its speed is regular.
c. its acceleration is increasing. d. its acceleration is decreasing.

Part 3

B Look at the opposite figure then answer :

1. The name of this phenomenon is
2. The name of the phase in which it occurs is
3. The type of cell division is
4. In this phenomenon parts of the two inner chromatids of are exchanged.



C A train moves in a straight line and its speed is changed from 12 m/s to 24 m/s during 6 seconds, what is the value of its acceleration ?

Question 2

A Write the scientific term for the following statements :

1. A transparent optical piece that its medium refracts light and is limited with two spherical surfaces.
2. Quantities enough to identify it knowing its magnitude only.
3. The combination of a male gamete and a female gamete to form a zygote.
4. The covered distance in a fixed direction.

B According to the assumptions of the modern theory for the scientist Fred Hoyle about the origin of solar system, **arrange the following events from the oldest to the latest.**

1. A gaseous cloud remained and subjected to cooling and contraction forming planets.
2. The attraction force of the Sun controlled the orbits of planets around it.
3. The star exploded and bombing of its nucleus away from the gravity of the Sun.
4. A star was rotating near the Sun.

C Give the reason for :

Sexual reproduction is the source of the genetic variation.

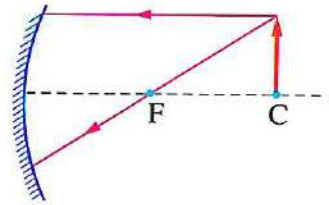
Question 3

A Correct the underlined words :

1. The car speed can be determined directly by using compass.
2. Contact lenses stick directly to eye pupil and can be removed easily.
3. Vegetative reproduction in plant is considered from types of sexual reproduction.
4. The regular speed is the scalar speed but in a definite direction.

B In the opposite figure, answer the following questions :

1. Complete the paths of rays indicating the image of the object.
2. The properties of formed image are :
 - a)
 - b)
 - c)



C What happens when ...?

A moving object covered the same distance it moved and the time is doubled (according to its speed).

Question 4

A Complete the following statements :

1. Reproduction by sporogony occurs in
2. If the speed of a car is 72 km/h, this means that its speed equals m/sec.
3. mirror is placed on the corners of narrow roads to monitor the movement of cars.
4. when a body moves 60 metres northward then returns 40 metres southward, so its displacement is northward.

B Cross out the odd words :

1. Bacteria – Amoeba – Yeast fungus – Euglena.
2. m/sec^2 – m/sec. – m/minute – km/hour.
3. Plane mirror – Real image – Virtual image – Equal to the body.
4. Force – Displacement – Acceleration – Mass.

C Compare between short and long sightedness in the following table :

P.O.C	Short sightedness	Long sightedness
Definition		

27 Matrouh Governorate

Answer the following questions :

Question 1

A Choose the correct answer :

1. The parent individual disappears when reproduction occurs in the
a. yeast fungs. b. hydra. c. bacteria. d. starfish.
2. If the relative speed of a moving car is 80 km/h relative to a static observer, so the actual speed of this car is
a. zero. b. 40 km/h. c. 80 km/h. d. 160 km/h.
3. The building units of universe are
a. stars. b. galaxies. c. planets. d. moons.
4. If an object of 5 cm length is put at a distance of 6 cm from convex mirror its focal length is 4 cm, so the length of the formed image is
a. 7 cm. b. 6 cm. c. 5 cm. d. 4 cm.

B Write the scientific term for the following statements :

1. They are thread like bodies represent the genetic material of the living organism.
2. It's a point inside the lens if an incident light ray falls passing through it, the light ray will pass as straight line.
3. It is the rate of change of displacement.
4. An optical piece which is used to treat vision defects and it sticks to eye cornea.

C An object moves at 90 km/h and its speed decreases by the rate 2m/s^2 Find the car speed after 10 seconds from the beginning of movement.

Question 2

A Correct the underlined words :

1. The origin of the solar system was the Sun according to the nebular theory.
2. To identify displacement it is necessary to know its magnitude and time.
3. Number of resulting cells from meiotic division equal the number of resulting cells from mitotic division.
4. The result of multiplying the speed of the body by the time equals the acceleration.

B Mention one example of each of the following :

1. A produced cell form meiotic division.
2. An optical piece forms real and diminished image.
3. Motion in one direction.
4. Scalar physical quantity.

C Compare between :

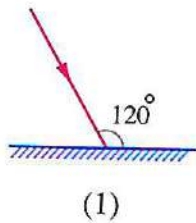
According to	Long sightedness	Short sightedness
The position of the images concerning the retina :		
		

Question 3

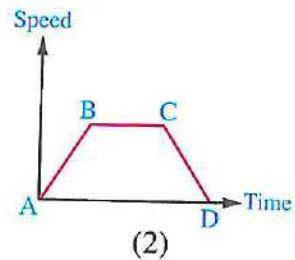
A Choose the odd sentence :

1. The observer state – Actual speed – The direction of observer's movement – Relative speed.
2. Reversed image – Upright image – Real image – Equal size image.
3. Sprial arm of Milky Way galaxy – The old stars – The recent stars – The Sun.
4. Produce ova – Compensation of the damaged cells – Produce new individuals identical to their parents – Growth of living organisms.

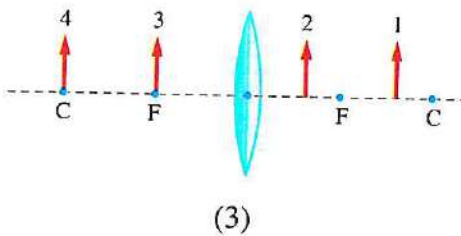
B Study the following figures then answer the questions below :



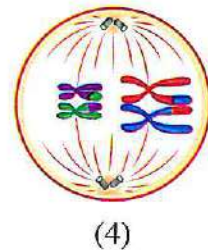
The angle of incidence is



At the period (BC) the acceleration equals



In which position the object must be placed to form a virtual erect enlarged image



The figure represents one of phases of meiotic division which is

Part 3

C Give a reason for :

Interphase occurs before cellular division.

Question 4

A Write the number which indicates each of the following :

1. The number of cells produced by a liver cell divides three successive divisions.
2. The number of stars in solar system.
3. The distance between the focus of the spherical mirror and its pole if the radius of curvature = 20 cm.
4. The displacement of a moving object whose end position is the same as starting position of his movement.

B Put (✓) in front of the correct sentences and (✗) in front of the false ones :

1. If a light ray falls passing through the center of the mirror curvature, it will reflect on itself. ()
2. The crossing over phenomenon occurs during anaphase I of meiotic division. ()
3. When a light ray falls perpendicularly on a reflecting surface, its angle of reflection equal 90° . ()
4. When an object moves at increasing acceleration, this means that its final speed is more than its initial speed. ()

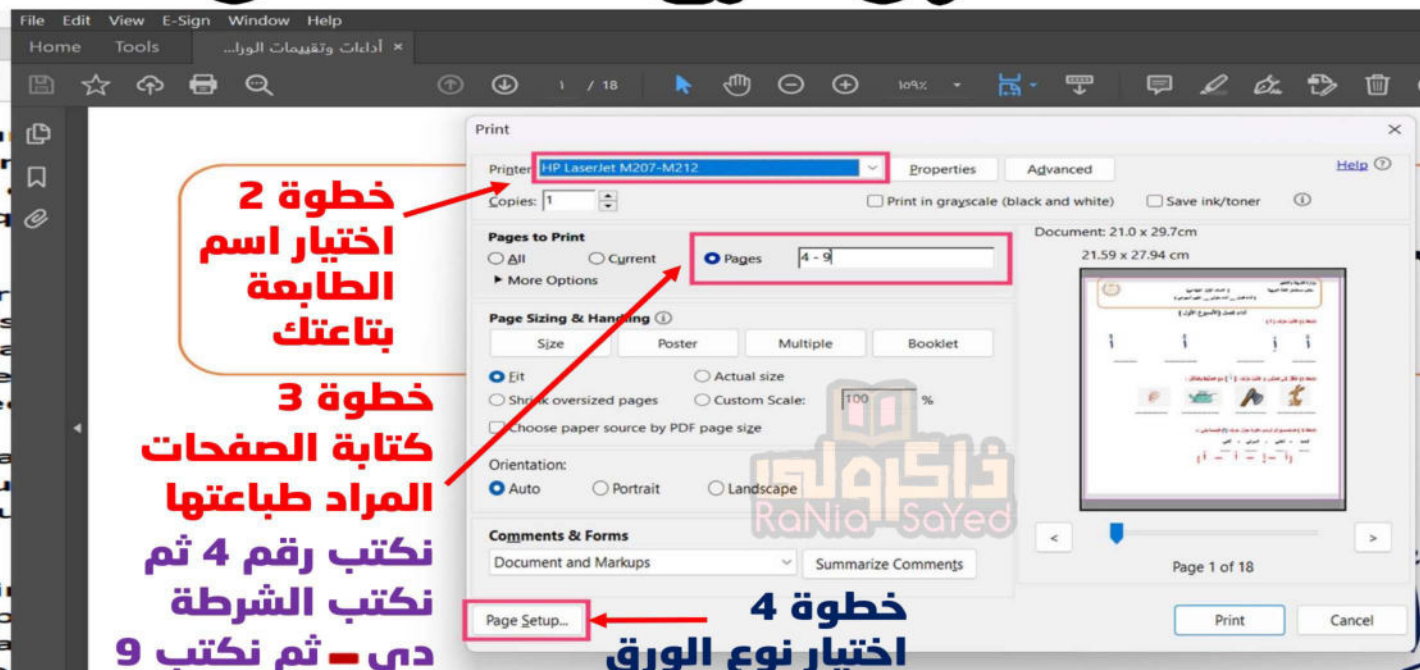
C Describe the motion of the object if :

1. It covers equal distances at equal periods of time.
2. It doesn't change its position by passing time.

كيفية طباعة صفحات معينة من ملف معين مثلا ازاي نطبع الصفحات من صفحة 4 الى صفحة 9



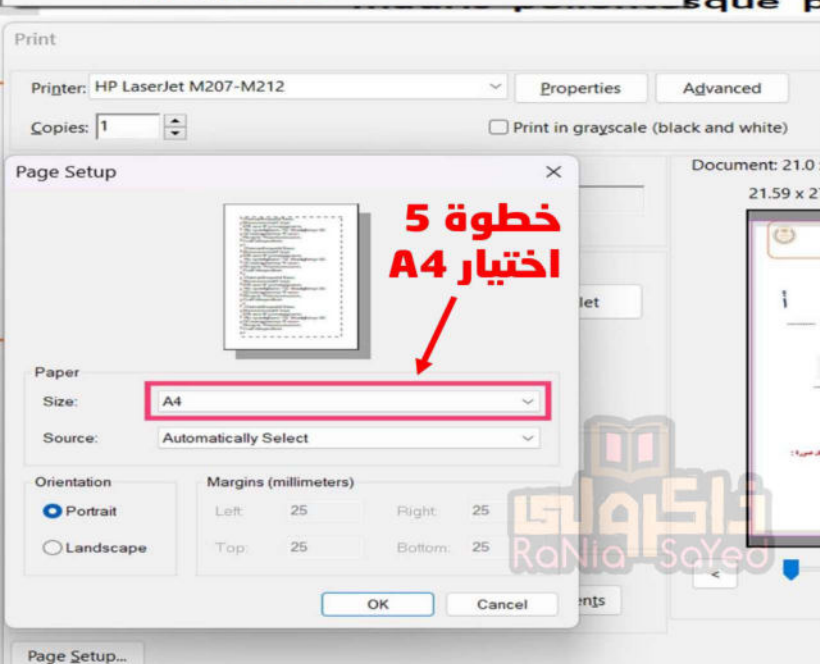
خطوة 1



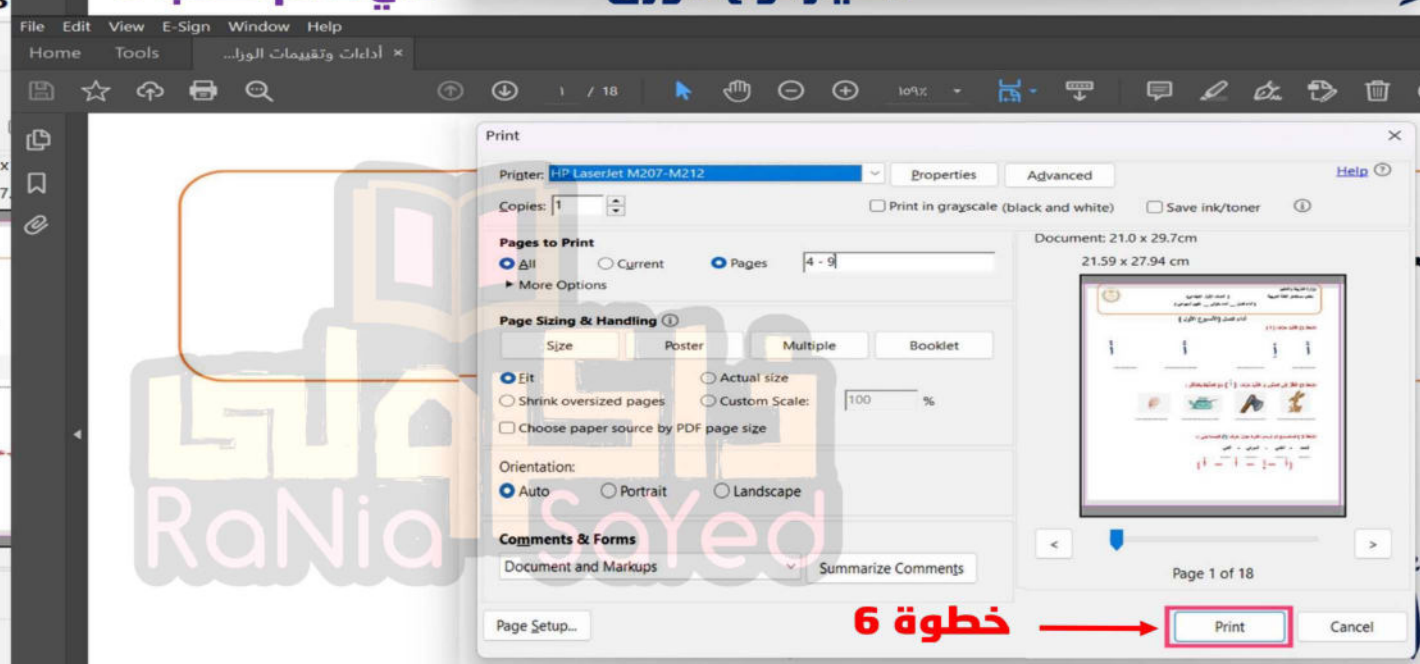
خطوة 2
اختيار اسم
الطابعة
بتاعتك

خطوة 3
كتابة الصفحات
المراد طباعتها
نكتب رقم 4 ثم
نكتب الشرطة
دي - ثم نكتب 9

خطوة 4
اختيار نوع الورق



خطوة 5
اختيار A4



خطوة 6